SUPPLEMENT

TO THE

EDINBURGH

NEW DISPENSATORY.

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I HAVE long intended to publish a Supplement or Appendix to the Edinburgh New Dispensatory, to comprehend various subjects excluded by the limits within which it was necessary to confine that work. The execution of my project to a certain extent has been finally determined by the notes subjoined by MM. Chereau and Robiquet to a translation of the Tenth Edition of the Dispensatory by M. Pelouze, recently published in Paris. As might have been expected from the celebrity of these Pharmaceutists, these notes contain a great variety of useful information, especially upon subjects which are more cultivated and better known in France than in this country. I therefore considered it almost a duty to take the earliest opportunity of communicating to my readers what was considered by such competent judges to be necessary for completing the Dispensatory as a Pharmacological Manual.

With the exception of some notes, referring to the Elements of Pharmacy, which no longer forms a part of the Dispensatory, the whole of the additions of MM. Chereau and Robiquet are faithfully, perhaps too literally, translated. As they were chiefly intended for their countrymen, very short references to the excellent periodical works devoted to pharmacy, which are published in Paris, were commonly sufficient; but in order to render them generally instructive in this country, I have thought it necessary frequently to subjoin a more detailed abstract of the original papers, which I have almost always consulted. In a very few instances I have ventured to differ from my annotators, and have generally stated my reasons. On some occasions I have been enabled, by the progress of science, to give additional information,

and on others I have willingly taken the opportunity of investigating some doubtful points more fully.

I have taken considerable pains in verifying and correcting the numerous references to authorities, in order to facilitate to others further inquiry, and to serve as a contribution to the literary and bibliographical knowledge of the subject.

The various classifications of the Materia Medica which form the subsequent part of this volume will, I trust, be found useful. Arranged catalogues, when a multiplicity of articles are the object of study, cannot be too much diversified. Each of them answers a particular purpose more perfectly than the others do, and there is none of them in which much information is not condensed in a systematic, and therefore scientific, form. Some of them I have formerly distributed among my pupils as portions of heads of lectures, and frequent applications have been made to me for copies, which I could not grant.

In the production of the last of the Arrangements in this volume I have had no further share than in having directed the attention of my pupils to its utility, and made it the subject of a prize-question. To Mr Greeves I feel myself greatly indebted for having allowed me to take this method of giving publicity to his Essay, which, if I do not greatly err, will reflect credit on this University as a school of medicine, and be received as evincing that its students, by their industry and acquirements, keep pace with the general progress of science, and that its teachers are not deficient in zeal for the advancement of their several departments.

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APPENDIX.

No. I.

NOTES and ADDITIONS made by MM. CHEREAU *and* ROBIQUET, *to the French Translation of the Tenth Edition of the* EDINBURGH NEW DISPENSATORY; *with Additional Observations by* ANDREW DUNCAN JUN.

ACIDUM SULPHURICUM.—The opinion that glacial sulphuric acid was a mixture of sulphuric acid with sulphurous acid was long prevalent. It was advanced by the illustrious Fourcroy, author of the *Système des Connaissances Chimiques.* Nevertheless, Hellot, Baron, Brandt, who first obtained glacial sulphuric acid, and who employed for that purpose German vitriol, sometimes simply dried, took care to drive off first the plegm and sulphurous acid. Curious examples (of their processes) are to be found in Schroeder, * and in Lemery, corrected by Baron, &c. †

It is to M. Bussy, professor at the *Ecole de Pharmacie* at Paris, that we are indebted for an exact knowledge of the glacial sulphuric acid. He has demonstrated that it owes its properties to its containing a certain quantity of anhydrous acid, and that sulphurous acid is only accidentally present, and has no influence on its properties. ‡

The Nordhausen sulphuric acid, according to M. Muller, sometimes deposits selenium, and the same thing occurs in the acids of the same nature of Saxony and Bohemia. (Gmelin.)—Ch. and R.

In my last course of lectures on pharmacy I exhibited an experiment, which illustrated in a very satisfactory manner the mode in which the nitrous acid contributes to the acidification of the sulphur in the manufactory of sulphuric acid, as carried on in this country. A stream of sulphurous acid gas was made to meet with a stream of nitrous acid gas in a common globular receiver; crystals were speedily deposited upon the sides of the balloon, and were formed in the air, floating in it like fine snow. By their accumulation, a complete crust at last coated the inner surface of the vessel, and, on sus-

* Pharmacopœia Medico-Chymica. 4to. Ulmæ, 1644. Lib. iii. cap. xxvi. p. 146.
† Lemery, Cours de Chimie; par M. Baron. 4to. Paris, 1757.
‡ Journal de Pharmacie, T. x. p. 279.

pending the operation, the necks of both retorts. The crystals were white or colourless, acicular, shooting from those first formed at an acute angle, (33 ?) very much resembling the crystals of ice seen upon the inside of bed-room windows in severe frost. Upon the contact of water, a brisk effervescence of nitric oxide took place, with the formation of red fumes of nitrous acid, which was thus ready to combine with a fresh quantity of sulphurous acid, and to impart to it an additional proportion of oxygen, on the nitro-sulphurous acid coming in contact with water.

It was observed, that although two gaseous bodies were in this experiment rapidly condensed into a solid form, no evident evolution of caloric took place; that is, the balloon did not get sensibly warm, but on the decomposition of the nitro-sulphurous acid great heat was produced, although a gas was rapidly evolved.

The affinity for each other of two acids, both electro-negative bodies, so strong as to condense both from the state of gas, and so determinate in proportion as to induce a definite form of crystallization, is also worthy of remark.—(A. D. Jr.)

Aconitum.—M. Brandes has announced that this plant contains a vegetable alkali, to which he has given the name of *Aconitine*.—Ch. and R.

Peschier, an apothecary at Geneva, examined, by Sertürner's process, both the *Aconitum Napellus* and *A. paniculatum*. He found them to contain an acid and a peculiar alkali; a small quantity of waxy matter, with phosphate and carbonate of lime. The acid formed crystallizable salts with potass and soda; an insoluble compound with baryta, did not precipitate the salts of lime, iron, copper, or zinc, but had a powerful action on those of silver, quicksilver, and especially of lead. The alkaline principle on being mixed with alcohol formed a milky solution, which soon became clear, and acquired a crystalline crust. It dissolved without effervescence in acids, and yielded crystallizable salts. *

Trommsdorff ascertained that the salt which precipitates on evaporating the juice of the *A. tauricum*, was, in all probability, malate of lime, and the same salt was found in the officinal extract of aconite.†

So far as I have been able to learn, Dr R. Brandes has not published any detailed account of the properties of aconitine. In the introduction to his very elaborate paper on *Atropa Belladonna*, he merely enumerates aconite among the vegetables which contain a poisonous base; ‡ and in a subsequent volume, he distinctly states that he has discovered the narcotic principles of aconite, and of all other narcotic plants, but is obliged to postpone the publication of his investigation on account of his injured health. ||

Geiger, in a historical review of the organic bases, enumerates aconitine as discovered by Brandes in the *Aconitum Neomontanum*, but

* Trommsdorff's neues Journal der Pharmacie, B. v. p. 34. 1821.
† Trommsdorff's neues Journ. B. vii. p. 21. 1823.
‡ Buchner's Repertorium für die Pharmacie, B. viii. p. 296. 1820.
|| Buchner's Repert. B. xxi. p. 33. 1825.

merely adds that it is an acrid and poisonous alkali, whose further properties are still to be made known. *

Lastly, Chevallier, in the very valuable work in which he is engaged along with Richard, † also states, that he is unacquainted with the details of Brandes's investigation of aconite, and gives an account of Dr Pallas's analysis of the root of the *A. Lycoctonum.* ‡—A. D. Jr.

The same properties have been often attributed, sometimes to the *Aconitum Napellus*, sometimes to the *Aconitum cammarum.*

" Sermo hic est de varietate: flore saturatius violaceo. Reprobabunt forsitan quidam, me Störckii iconem huic plantæ (*A. Napello*) adjunxisse quum Hallerus, || contra ea istam *Aconito Cammaro*, L., cum omnibus, a Störckio, aliisque medicis, *Napello*, L. adscriptis affectibus tribuerit. Verum ipse observavi, pro ætate varia plantæ differre foliorum lacinias figura et profunditate, quin in uno eodemque cauli, ita ut inferiora folia magis laciniata et acuminata appareant superioribus; porro florum pedunculos mox unifloros, mox multifloros esse." § This observation may serve to explain the contradictions which are met with in authors.—Ch. and R.

The remarks of Professor Murray must, however, give way to the more accurate observation of modern botanists.

De Candolle in his *Prodromus* ¶ has divided the genus *Aconitum* into four sections; *Anthora, Lycoctonum, Cammarum,* and *Napellus.* The plant which Störck used in medicine, and whose effects he has described, was a variety of a species of the third order, or *Cammarum,* to which Lamarck and De Candolle have given the trivial name of *paniculatum,* var. γ. *Störckianum.*

I transcribe from the Prodromus the characters of the section, species, and variety.

Cammarum.—Sepala decidua, galea conica compressa, ovaria 3.5.—Lobi foliorum trapeziformes pinnatisecti; radix tuberosa; flores cærulei albo variegati, raro carnei.

A. paniculatum.—Panicula divaricata, ramis tortuosis flexuosis (puberulis) galea conico-semicirculari, rostro inclinato, sacco cucullorum subconoideo, calcare crasso brevi spirali, labio longitudine sacci, alis staminum angustis evanescentibus, ovariis 3, rarius 4, folliculis elongatis (2) in Helvetia. Seringe, Musée Helvet. I. p. 144, t. 15, fig. 20, 21.

γ. *Störckianum,* (Ser. Mus. Helvet. I. p. 145.) Caule flexuoso, paniculla laxa debili, rostro brevi. In alpibus Helveticis. *A. Napellus*

* Buchner's Repert. B. xiii. p. 356. 1822.

† Dictionnaire des Drogues simples et composées; ou Dictionnaire d'Histoire Naturelle Medicale, de Pharmacologie, et de Chimie Pharmaceutique. Par A. Chevallier, Pharmacien-Chimist; et par A. Richard, M. D. 8vo. T. i. Paris, 1827. Article *Aconitine*, p. 201.

‡ Journal de Chimie Medicale, T. i. p. 192. Paris, 1825.

|| Hist. Stirp. Helv. n. 1198.

§ Apparat. Medicam. Auc. Andrea Murray, M. D. T. iii. p. 6. Gotting. 1784.

¶ Prodromus systematis naturalis Regni Vegetabilis. Auctore Aug. Pyramo De Candolle. Pars 1ma, 8vo. Londini, 1824.

officinalis. Stork Libell. de Stram. et p. 69, icon.—*A. paniculatum α.* D. C. Syst. i. p. 373.

Acorus Calamus.—The *Acorus Calamus* is sometimes confounded with the *Acorus verus.* The latter is a knotty root, marked with circles in close rings, more compact, redder than the *Calamus aromaticus;* smell aromatic, taste peppery, slightly bitter. The *Acorus Calamus* is smaller, compressed, and slightly flattened. In the interior part may be observed an infinity of small circular marks proceeding from the radicles which have been taken off. Externally of a brown colour, internally of a rosy white; internal substance spongy. It has a hot pungent taste, mingled with slight bitterness; smell very pleasant.—Ch. & R.

Similar cautions against substitutions have been given by other French pharmacologists. Dr Ratier, in his Translation of the French Pharmacopœia, * says: "This acorus ought not to be confounded with the *Calamus aromaticus,* nor with the *Acorus verus,* both natives of India, and of which the first is the stalk of a kind of cane, which is tied up in little bundles, but in the present day occurs very rarely in commerce."

Richard also, in the *Dictionnaire des Drogues,* tells us that the *A. calamus* is quite different from the *Calamus aromaticus,* with which it is often confounded in books and shops.

In Britain there is no danger of any mistake, as the root of *A. calamus* alone occurs in commerce.

Three different plants seem, however, to be alluded to by the French pharmacologists.

1. *Acorus calamus,* Lin., which furnishes the officinal root, and is described in the Dispensatory.
2. *Acorus verus.*—Willdenow described two varieties of *A. calamus,* one he called *vulgaris,* European; and the other *verus,* Indian. Sprengel, in his *Species Plantarum,* makes the latter a distinct species, under the title of *A. terrestris,* given to it by Rumphius. † It is the *A. Asiaticus* of Burmann, ‡ and the *A. calamus* of Loureiro, || and of Thunberg. § Dr Ainslie ¶ tells us that its name is *Bach* in the Hindooie language; *Vachā* in the Sanscript; *Vassamboo* in the Tamool; *Vaesambu* in the Cyngalese; *Deringo* in Java; and *Igir* in the Persian. Now Garzias ab Horto** gives as synonyms of the *Calamus aromaticus, Vaz* in the Guzurate; *Bache* in the Decan; *Vazabu* in Malabar; *Dirimguo* in Malay; and *Hejer* in Persia; a coincidence which leaves scarcely a doubt as to the identity of the

* Pharmacopée Française, ou Code des Medicamens; Nouvelle traduction du Codex Medicamentarius, sive Pharmacopœia Gallica, par F. S. Ratier, Docteur en Medicine; Augmentée des Notes et Additions, par O. Henry, fils, Maitre en Pharmacie. 8vo. Paris, 1827.

† Herbarium Amboinense, Lib. viii. p. 131, tab. lxxii. fig. 1.

‡ Thesaurus Zeylanicus, p. 6.

§ Flora Japonica, p. 144.

|| Flora Cochinchinensis, T. i. p. 28.

¶ Materia Indica, Vol. i. p. 417.

** Car. Clusii, Atrebatis, Exoticorum libri decem. Folio. Raphelingii, 1605. See page 200.

plants. He also says that *Calamus aromaticus* used in the shops in Portugal is the same with that in common use in Goa. Clusius likewise mentions, (p. 201) that a kind of *calamus* used to be brought to Antwerp from Lisbon very like that in common use, (A. C.) but of a rank smell, and a horrible taste, and on this account was laid aside, although thought to be more efficacious.

But how are we to reconcile with all this the description by Garzias? "Is vero quo utimur (Goæ) radix non est (pusilla etenim est radix) sed ipsius calami cum aliquantula interdum radicis parte fragmentum."

3. *Calamus aromaticus.*—The plant designated under this name has long been a subject of dispute among the learned, and has given rise to many learned but unsatisfactory disquisitions. Κάλαμος is noticed by Hippocrates as entering into the composition of baths and ointments. Theophrastus, in his account of it,* does not add the epithet ἀρωματικὸς, but says that it grows along with the Σχοῖνος beyond Mount Libanus, in the marshes around a large lake; that they do not differ from other plants of the same kind; and that their smell is perceived on entering the place of growth, but not at a greater distance. He also leaves no doubt as to its being a totally different plant from the *Acorus*. According to Dioscorides, "Calamus odoratus in India nascitur. Melior est fulvus, dense geniculatus, et qui assulose frangitur, plena araneorum fistula, albicans, lentus in mandendo et astringens cum aliquanta acrimonia. Malagmatis et suffitionibus odoris gratia commiscetur." † It seems to me doubtful whether the *calamus* of Theophrastus and of Dioscorides be the same. Pliny, however, considered them the same, and has blended the two descriptions: "Calamus quoque odoratus in Arabia nascens, communis Indis atque Syriæ est, in qua vincit omnes. Nihil ergo a ceteris sui generis differunt aspectu: sed calamus præstantior odore, status e longinquo invitat, mollior tactu, meliorque qui minus fragilis: et qui assulose potius, quam raphani modo frangitur. Inest fistulæ araneum, quod vocant florem. Præstantior est, cui numerosius; Reliqua probatio, ut niger sit. Damnatur alicubi. Melior, quo brevior, crassiorque et lentus in frangendo. Calamo pretium in libras xi. junco xv. Traduntque juncum odoratum et in Campania inveniri." ‡

No additional information is furnished by Galen and the Arabians, at least Avicenna and Serapio merely copy the Greeks. From their description it is vain to attempt to discover the plant designed, and it can only be determined by a botanist examining the *habitat*, so accurately pointed out by Theophrastus.

The *C. aromaticus* was one of the ingredients entering into the com-

* Theophrasti Eresii de Historia Plantarum, libri x. Græce et Latine. Folio. Amstelodami, 1644. Latin Translation by Theodore Gaza; Commentaries and Figures by John Bodæus à Stapel, and Critical Notes by Scaliger and Constantine.

† Petri A. Mathioli, Senensis, Comment. in vi. libros Pedacii Dioscoridis Anazarbei de Medica Materia. Folio. Venetiis, 1583. p. 51.

‡ Caii Plinii Secundi Historiæ Naturalis libri xxxvii. quos interpretatione et notis illustravit Joannes Harduinus. Editio altera, Tom. iii. Folio. Parisiis, 1723. Lib. xii. § 48.

position of the celebrated antidote *Theriaca,* and at a very early age the roots of the *A. calamus* were used as being the substance intended. But the propriety of this practice is disputed by Prosper Alpinus, * who contends that it is evident that the *C. aromaticus* of the ancients was a cane and not a root, "*non radicem sed cannam vel calamum;*" and he describes what is used in Egypt, "qui quidem certissimus calamus aromaticus antiquorum est; calamus enim inprimis est, colorique subfulvo spectatur, est fistulosus, concavus, odoratus, amarus cum aliqua acrimoniâ, assuloseque frangitur, id est, in frustula multa inæqualia, inque fistularem meatum florem vocatum habet." Clusius, in his notes upon Garzias, mentions his having received from Paludanus, on his return from Syria and Egypt, the true *C. aromaticus* in 1579; and he has not only described it with great accuracy, but has figured it: "Umbellifera potius planta quam arundinacea, meo judicio, censenda est; etenim rectum habet caulem, multis nodis seu geniculis cinctum, lævem alioqui, intus concavum; et membranula uti arundines præditum, qui assulose, quemadmodum Dioscorides scriptum reliquit, frangitur; estque satis odoratus gratique saporis, amari tamen, et nonnullæ astrictionis particeps; folia, uti ex vestigiis colligere licet, bina ex adverso sitis singula geniculis sita caulem amplecti videntur; radix summo capite nonnihil extuberat, deinde in fibras desinit." In 1593 he received from Colinas, who had translated his work into French, fragments of what he used as the *calamus,* which agreed perfectly in form with that of Paludanus, but had a more bitter taste, without any astringency. The plant which Bodæus has described as the true *calamus,* and of which he has given figures, (p. 1007) strongly resembles that of Clusius. It had a stalk a foot long, straight, round, smooth, brittle, yellow, *(fulvus)* internally hollow and spongy, furnished with a membrane, like a white web suspended; breaks into shivers, divides into four or five branches, like the *Ligustrum alpinum vel molle* of Clusius, which carry many small foliaceous flowers, each upon a single stalk, out of the middle of which projects an apex like a style; in form and figure these floscules are very similar to those of the ninth Ledum of Clusius. He got it from Arnold Douves, who was in the habit of going every third or fourth year to the eastern countries to purchase simples; but what is inconsistent with its being the *calamus* of Theophrastus, he said, that, although it was sold in Syria, it did not grow there. Lastly, Guibourt, † from inspecting a specimen which had long been in the house of M. Boutron, under the title of *Calamus verus,* was led by its perfect resemblance to consider it as the stem of the *Gentiana chirayta,* the more so as their chemical analysis also corresponded. ‡ Richard, however, in the *Dictionnaire des Drogues,* Vol. i. p. 512, properly remarks that the *Gentiana Chi-*

* P. Alpini de Medicina Ægyptiorum, libri quatuor. Editio ultima, 4to. Parisiis, 1546, p. 137, b.

† Journal de Chimie Medicale, de Pharmacie, et de Toxicologie, Vol. i. 8vo. Paris, 1825, p. 229.

‡ Journal de Chimie Medicale, Vol. i. p. 233; et Journal de Pharmacie, Vol. vii. p. 283.

rayta was completely unknown to the ancients, and is totally without smell. It is, however, singular, that the figures of Clusius and Bodæus so exactly resemble specimens of *G. chirayta* in my possession, that, but for their want of smell, their identity could scarcely be doubted. Such is the unsatisfactory result of my inquiries; but having made them, I was unwilling to suppress them, as they may save trouble to others.—(A. D. Jr.)

Æsculus Hippocastanum.—The experiments made with bark of the horse-chestnut have not been favourable to its reputation as a febrifuge. In this respect its use ought to be abandoned. MM. Pelletier and Caventou think the cinchona bark, even of inferior quality, preferable to it.—Ch. and R.

The conclusion which M. Henry draws from his experiments with horse-chestnut bark, compared with those of Vauquelin, on the different species of cinchona, in No. 176 of the Annales de Chimie, is, that there is no well marked analogy between the bark of the horse-chestnut and that of cinchona. *

MM. Vauquelin and Correa de Serra, inserted a detailed analysis of various organs, as buds, scales, leaves, petals, stamens, embryo, fruit, &c. of the horse-chestnut,† and they found that the predominant vegetable principles in the bark were tannin and gallic acid, and that it was a mere astringent.

The adulteration of yellow Peruvian bark with horse-chestnut bark was pointed out by M. Planche. ‡

Lastly, in the admirable memoir on the chemical analysis of the different kinds of the bark of the true cinchonas and analogous trees, MM. Pelletier and Caventou || have shown that the active principle of the horse-chestnut bark is a kind of tannin, and that there is no principle in it analogous to the alcaloids of the cinchonas.—(A. D. Jr.)

Æsculus Hippocastanum.—M. Canzoneri announced the existence of a new substance, (Esculin) in the fruit of the horse-chestnut, but this discovery has not been confirmed.—Ch. and R. §

The existence of such a substance as that described by Canzoneri as a new vegetable principle was doubted on general grounds by M. Robiquet and M. Guibourt. Not satisfied with this, M. Chereau attempted to get this alleged new principle, by following as accurately as he could the process described by M. Canzoneri, but did not procure any of it.—(A. D. Jr.)

* Notice sur le Marronier d'Inde; par M. Henry. See Annales de Chimie, T. lxvii. 8vo. Paris, 1808, p. 205.

† Annales de Chimie, Tom. lxxxii. p. 309, and lxxxiii. p. 36.

‡ Bulletin de Pharmacie, T. i. 8vo. Paris, 1809. See p. 33.

|| Recherches Chimiques sur les Quinquinas. See Journal de Pharmacie, Vol. vii. p. 123.

§ Essai sur le Marronier, by M. Canzoneri. Translated from the Italian by M. Chereau. Journal de Pharmacie for 1823, p. 539; and the note upon esculine by the latter, in the same Journal for January 1825, p. 47.

ALCOHOL.—M. Gay-Lussac has constructed an instrument which he has denominated Alcohometer. * The scale is divided into 100°. Each of these degrees indicate the proportion of pure alcohol contained in 100 parts of a mixture. Thus, for instance, when the instrument indicates 25°, it signifies that 100 parts of the liquor submitted to proof contains 25° of pure alcohol, and 75° of water. Pure alcohol indicates 100°.—Ch. and R.

I have not seen the description of M. Gay-Lussac's alcohometer, or the instrument itself; but, however convenient its construction may be, it is evidently a *per centage* hydrometer, and liable to the same objection as the others,—that their language is dependent upon the strength of the standard alcohol assumed by their inventor, and hence variable. When, however, their language is thoroughly understood and generally received, it is convenient upon many occasions, although, upon the whole, very far inferior to the number expressing the specific gravity. I may here refer to the observations upon *per centage* hydrometers, page 135–6 of the eleventh edition of this Dispensatory, and to the extensive work of Meissner on Areometry.†

As a corroboration of the advantage of using the numerical expression for designating the specific gravity, we may observe that different degrees have been assigned to Proof spirit. By act of Parliament 1762, it was fixed as equal to the specific gravity 916. But the London College has named a spirit of 930, and that of Edinburgh one of 935, as an equivalent. In paragragh 77 of the Elements of Pharmacy, prefixed to the Dispensatory, eleventh edition, I have improperly inserted 933, the medium number of the two latter. It should have been 920, which is the strength of Proof spirit, by the act of Parliament which now regulates the excise duty.

At present a different language is used by the excise and dealers in spirits from that adapted to Clark's hydrometer, of which there is a table inserted in page 200. It is that of Sikes's hydrometer now used by the excise. It expresses by numbers the proportionate parts of water, which are to be added to, or taken away from, the spirits described, to bring 100 parts to the strength of Proof spirit of 920. In regard to strong spirits, they say it is *e. g.* 60 over proof, which means, that to 100 parts as much water will require to be added as will increase its volume to 160, and excise duty is paid for 160; in regard to spirits weaker than water they say it is *e. g.* 20 under proof, or that it would require 20 parts of water to be removed to bring it to the strength of proof spirit, and the duty is levied only on the remaining 80.

* These instruments are to be purchased at the Magazin des Produits Chimiques de MM. Robiquet et Boyveau; rue des Fossés-Saint-Germain l'Auxerrois, No. 5; and the explanatory work, l'Instruction sur l'Usage de l'Alcohomêtre centesimal, in the shop of M. Colardeau, rue de la Ceriseraie, No. 3.

† Die Arcometrie in ihren Anwendung auf Chemie und Technik. Folio. Wien, 1816.

Comparative Table of specific gravities of spirits, with the degrees of Dicas and Sykes's Hydrometer; and the proportion of alcohol of 825, which they are estimated to contain; at 60°. *

Sp. Gr.	Parts of such alcohol in 1000.	Over Proof. D. & S.	Sp. Gr.	Parts of such alcohol in 1000.	Over Proof. D. & S.	Sp. Gr.	Parts of such alcohol in 1000.	Spirits under Proof.
825	1000	63 †	884	729	28	938	456	17***
826	993	62	886	719	27	940	444	19
828	984	61	888	709	25	942	432	21†††
830	975	60	890	699	24	944	421	23
832	966	59	892	689	22	946	411	24‡‡‡
834	957	58 ‡	894	680	20	948	397	26
836	949	57	896	671	19	950	382	28
838	940	56	898	662	17	952	370	31
840	932	55 ‖	900	649	15	954	358	34‖‖‖
842	924	54	902	641	14	956	346	36
844	916	53	904	631	12	958	333	39
846	908	52	906	621	11	960	315	42
848	898	50	908	612	10	962	300	45
850	888	49	910	602	8 §	964	285	48§§§
852	878	48	912	591	7	966	270	51
854	868	47	914	581	5	968	253	54
856	857	46	916	571	3	970	236	57
858	849	45	918	562	1	972	218	60
860	840	45	920	550	¶	974	200	64
862	833	44			Spirits	978	175	72
864	823	43			under	980	150	75
866	813	42			proof.	982	135	77
868	807	40	922	540	2	984	120	80
870	798	39	924	531	4	986	105	82
872	787	38	926	521	6**	988	90	85
874	776	36	928	510	7††	990	75	89
876	768	34	930	500	9‡‡	992	60	92
878	757	32	932	489	11‖‖	994	45	95
880	746	30	934	479	13 §§	996	30	96
882	738	29	936	468	15 ¶¶	998	15	98
						1000	Distilled water.	

* Tables showing the comparative value of spirits from 5s. to 40s. *per* gallon, and for reducing spirits from 9 to 2 *per cent.* over proof to 10 *per cent.* under proof from 50 to 50,000 gallons; likewise tables showing the comparative quantity of water requisite in reducing spirits from 40 *per cent.* over proof to 32 *per cent.* under proof from 20 to 700 gallons, corresponding with Dicas and Sykes's Hydrometer; also tables of weight and specific gravities of spirits, &c. By James Dallas, Edinburgh. 8vo. London, 1818.

† 810 *Alcohol*, Dub.; 815 *Alcohol*, Lond.

‡ 835 *Spiritus Rect.*, Lond.; *Alcohol fortius*, Ed.

‖ *Spiritus Rectificatus*, Dub. § One to ten over hydrometer proof.

¶ Proof by the excise law; 919 *Spiritus tenuior*, Dub.

** One in 20. †† One in 15.

‡‡ Equal parts of alcohol and water. *Spiritus tenuior*, Lond.

‖‖ One in 10. ¶¶ One in 7. ‡‡‡ One in 4.

§§ — 8 — *** — 6. ‖‖‖ — 3.

935 *Alocohol dilutius*, Edin. ††† — 5. §§§ — 2.

Comparative Table of Clark's and of Dicas and Sykes's Hydrometer.

Over Proof.

One to	20	15	10	9	8	7	6	5	4	3	2	Alcohol.
Clark,	3.5	5.37	8.5	9.25	10.5	12	15.5	19	22.25	28.5	43	66.5
D. & S.	5	6	10	11	12.5	14	16.5	20	25.	33	50	

Under Proof.

One in	2	3	4	5	6	7	8	9	10	15	20
Clark,	42	30.5	22.75	19	16	14	11.75	10.5	9.25	7	5
D. & S.	50	33	25	20	16.5	14.5	12.5	11	10	7	5

I take this opportunity of correcting a typographical error in the preamble to the table of the specific gravities indicated in the French Pharmacopœia. (Disp. edition 11th, p. 137.) It is there stated that they are adapted in general to the temperature of " 14° Cent., or 19.5° Reaumur." It should be " 14° Reaumur, or 17.5° Cent. ;" and it is equivalent to 53.5° Fahr.

Alcohol Dilutius.—It is an error at least for France to say, that " it is hardly to be expected that apothecaries will be at either the trouble or expence of preparing dilute alcohol, by mixing rectified spirit with water in the due proportion," and that " instead of it an impure spirit of the requisite strength is generally employed."

The apothecaries in France do not employ impure alcohol, they take the pains of rectifying that which they require for use ; and, at all events, the means indicated by the author (that is the college process) does not offer any guarantee for its purity ; for it is quite as easy to procure impure alcohol that may be strong, as to take dilute impure alcohol.—Ch. and R.

The annotators have understood the term *impure* used by me in the passage alluded to, in a sense somewhat different from what I intended. *Commercial spirits* is the phrase which I should have employed. In this country the distillation and rectification of spirits are, like every other considerable manufacture, entirely in the hands of certain individuals, who devote their attention exclusively to one object. In this way a better article is commonly furnished than could be prepared by individuals performing occasionally the process ; besides, the difficulties arising from the operation of our excise laws interfere with the rectification of spirits by individuals.

The celebrated anatomist Soemmering first made known a singular fact in regard to the passage of fluids through various coverings, which he had observed in his endeavours to prevent the wasting of the fluids in which he kept his preparations. He found generally that fluids readily passed through covers with which they had some chemical affinity, and were retained by those which repelled them. Thus when dilute spirit was confined by bladder, the water escaped and the alcohol was retained ; but when confined by linen covered with caoutchouc varnish, the alcohol passed through and the water was retained. This led him to propose, as a chemical means of rectifying alcohol, to suspend it in bladders in a place where the temperature was warm and equal, and to improve wines by tying up

the mouths of the bottles with bladder, instead of closing them with corks and rosin. Others have in some measure confirmed or extended his ideas. In one experiment, not indeed made with every precaution necessary to obtain an accurate result, I satisfied myself that Soemmering's method will not answer *practically* for the rectification of weak spirits. I put nearly nine pounds of weak spirits, specific gravity 837, into a bladder, and hung it up in my museum for almost two months. During this time it had wasted to three pounds and a-half; no moisture was perceived on the outside of the bladder, and there was no smell of alcohol. On examination the spirit had become weaker, specific gravity 860, was somewhat turbid, and contained one grain of animal matter in each ounce. The inner membrane of the bladder was partially dissolved. Connected with this observation of Soemmering's, I may here notice another experiment. I had remarked that some specimens of vegetable substances put up in bottles filled with vinegar, and tied up with bladder, became dry, in consequence of the waste of the vinegar. That the method of closing the bottle was *air-tight* was demonstrated by the surface of the bladder being strongly pressed downwards by the weight of the atmosphere. I opened one of these under water, which instantly filled two-thirds of its cavity, and the air was found to consist chiefly of carbonic acid. I next tied up some glass jars with bladder. One of these contained water, another alcohol, a third distilled vinegar, and a fourth a saturated solution of sea salt in water. At first the vinegar diminished most rapidly, then the water, and salt water, and the spirit most slowly; but after a time the order was altered in the following manner,—water, vinegar, spirit, salt water. In five months the water had entirely disappeared; of the vinegar five-sixths was gone, more than three-fifths of the spirit, and not a-half of the salt water. The specific gravity of the remaining spirit had increased from 829 to 833; and solid cubic crystals of sea salt had formed in the bottom of its solution. In these experiments the evaporation from the upper surface of the fluid was not at all assisted by the solvent power of the atmosphere, nor by the blowing away of the vapour resting on its surface, for both were effectually prevented by the bladder. It is also worthy of notice, that the pressure of the vapour from within was not equal to the pressure of the atmosphere from without, for the bladder was in general strongly depressed; and that the bladder which was permeable to these fluids resisted the passage of air. The most obvious mode of explaining this is by supposing that the vapour of the fluid was condensed on the lower surface of the bladder, was imbibed by it, and then evaporated from its upper surface.

In the Royal Society of this city a paper was lately read by Mr Graham, describing a very ingenious and new method of rendering spirit stronger, and indeed of procuring absolute alcohol. It depends upon the strong attraction which lime has for water. He inclosed four ounces of spirit of specific gravity 825 at 60° Fahr. under the receiver of an air-pump, in which were also inclosed about twelve ounces of unslaked lime, and exhausted the air. The specific gra-

vity was taken every twenty-four hours, and it underwent the following changes:

Day	1st,	2d,	3d,	4th,	5th,	6th,	7th,
	.825	.817	.809	.804	.799	.797	.796

This is the absolute alcohol of Richter. Dr Hope repeated the experiment, and in fourteen days reduced spirit of .835 to below .800. It is necessary for the success of this process that the temperature of the place should not vary much, as otherwise distillation of the spirit takes place by its occasional condensation on the plate of the air-pump, and cold side of the receiver; and the quantity of lime must be sufficient to absorb the whole water, but not in great excess, otherwise the alcohol is also absorbed by it.—(A. D. Jr.)

ALOE.—The different opinions published concerning the plants yielding the different varieties of aloes will end in that stated by Dr Duncan. Formerly it was thought that the *Aloe spicata* furnished the hepatic aloes; it will now be considered as the source of the Socotorine aloes. The *Aloe vulgaris* will henceforth be held to produce the hepatic aloes of Barbadoes. But these facts will be cleared up by the publication of the work of Dr Sibthorpe. —Ch. and R.

The work of Dr Sibthorpe, (Flora Græca) to which he devoted a great part of his life and fortune, is publishing in a form, perfect indeed, but so extravagantly expensive, that, so far as I know, not a copy is to be found in Scotland. By the attention of a respectable bookseller to whom some of the fasciculi were sent by mistake, I had an opportunity of inspecting them. In regard to the aloes all we learn is, that the *Aloe vulgaris* is indigenous in Greece, and yielded the aloes of the ancients.

The Dublin College of Physicians, which formerly named the *Aloe sinuata?* as the source of the hepatic aloes, in the new edition of their Pharmacopœia, (1826), refer it to the *A. vulgaris* of De Candolle. Both the London and Dublin Colleges ascribe the socotorine aloes to the *Aloe spicata*, but De Candolle makes a distinct species of it, under the title of *A. Soccotorina.* *

Dr Ainslie, in his late work, † which abounds with valuable information on the productions of India, tells us that the aloes used in India is brought from the Cape of Good Hope, or from the Island of Zocotora. He considers them both as produced from the same species, which grows in abundance in Zocotora, and also in many parts of the south of Africa, such as the kingdom of Melinda, where the greater part of the extract is prepared that is now sold under the

* Histoire Naturelle des Plantes Grasses, avec Figures, dessinées par P. J. Redouté, et décrites par A. P. De Candolle. 2 Tomes, Imp. Folio. Paris, 1799. See T. i. p. 27. for *Aloe vulgaris*, and T. ii. p. 85, for *Aloe soccotorina.*

Roques, Phytographie Medicale, ornée de Figures coloriées de grandeur naturelle. 2 Tomes, Royal 4to. Paris, 1821. See p. 94, and Plates 26, 27.

† Materia Indica; or some account of those articles which are employed by the Hindoos and other Eastern nations in their medicine, arts, and agriculture, 2 Vols. 8vo. London, 1826.

name of Socotorine Aloes. There is another sort of aloes common in the Indian bazaars of very inferior quality, resembling more what is called in Europe, Barbadoes Aloes. It is more dusky in colour, has not the pleasant smell the other has, and is extremely bitter. It is brought from Yemen in Arabia to the western parts of the Peninsula. It is the product of a much larger plant than the other.—(A. D. Jr.)

ALOES.—Aloes is an extractive resinous juice, but its principles are so intimately united, that the one is rendered soluble by the intervention of the other. Braconnot considers it as consisting of one single resinoid principle.—Ch. and R.

Braconnot * considered the principle of aloes as approaching more to the nature of a gum than of a resin, and proposed to call it *Résino-amer*. He founded his opinion on aloes being entirely soluble in water as well as in alcohol, and the consequent impossibility of separating different principles. But Bouillon Lagrange, and Vogel,† have adhered to Trommsdorff's opinion, and have proved that aloes really contains two principles, one resino-extractive, and the other purely resinous; in the proportion of 68 extractive and 32 resin in socotorine aloes; and of 52 extractive, 42 resin, and 6 of insoluble matter in hepatic aloes. Socotorine aloes also contains an agreeable volatile oil, which the hepatic aloes does not furnish.

Trommsdorff found 12.5 per cent. of albumen in hepatic aloes, and none in the socotorine.‡ This was probably owing to the specimen of the former, which he had examined, having been a spontaneously concreted juice, and that of the latter, an extract obtained by decoction.

Pfaff examined the properties of the extractive of aloes, which, for convenience, he called Aloesin. When dry it has a red brown colour, is translucent in thin fragments, has a very bitter taste and a weak smell, something like saffron. In powder it has a beautiful yellow colour. It is perfectly soluble in water and in alcohol, and is insoluble in ether. Its solution does not redden litmus, but gives a bluish green to reddened litmus paper. Its colour is deepened by alkalis, and rendered paler by acids, and clearer by alum. It is not affected by solution of gelatine, tincture of nut-galls, muriate or oxymuriate of tin, tartar emetic, solutions of copper, zinc, or manganese. It is copiously precipitated by protonitrate of mercury and acetate of lead; less copiously by nitrate of lead and nitrate of silver. Solutions of peroxide of iron give a dark colour without precipitate. Lastly, it keeps long in a state of solution without change by fermentation or moulding.||

Meissner of Halle is satisfied that he has discovered an alcaloid in aloes.§—(A. D. Jr.)

* Annales de Chimie, lxviii. p. 19. † Ib. lxviii. p. 160.

‡ Trommsdorff, Journal der Pharmacie, xiv. p. 27.

|| System der Materia Medica nach chemischen Principien, Von Dr C. H. Pfaff, iii. bd. 8vo. Leipzig, 1814. See p. 48 and 328.

§ Trommsdorff's neues Journal der Pharm. vii. bd. S. 295.

ALOE.—Aloes is a valuable and useful drug, according to M. Barbier, author of a treatise on Materia Medica, * the most important of the present time.—Ch. and R.

This note seems to have been written for the sole purpose of introducing the eulogium of M. Barbier's work, and, although I cannot go so far as my commentators, I take this opportunity of recommending its perusal to the students of pharmacology.—(A. D. Jr.)

ALTHÆA OFFICINALIS.—The root of the marsh-mallow of commerce is furnished not only by the *Althæa officinalis*, but also by other *Malvaceæ*, such as the *Malva alcea* and *Alcea rosea*, or rather *Althæa rosea* of Cavanilles. M. Adam, apothecary at Metz, refers to the *Malva alcea*, the marsh-mallow root found in commerce, and which is very white. He says the branches are not forked as those of the marsh-mallow. The root which comes from Germany by the way of Strasburg is much whiter than that of the south, but not as thick. M. Adam considers moist sandy soils as best suited for the marsh-mallow.—Ch. and R.

M. Bacon thought that he had discovered a new principle in mallow root, to which he gave the name of Altheine, but M. Plisson, after a careful examination, determined its identity with the Asparagine of Robiquet. †—(A. D. Jr.)

AMOMUM ZINGIBER.—M. Planche has obtained from ginger a considerable quantity of starch as pure and as white as that of wheat. Ginger, as analyzed by M. Morin, yielded a resin soluble in ether, a subresin insoluble in ether, a volatile oil of a greenish blue colour, starch, gum, sulphur, and some salts. ‡—Ch. and R.

The plant which yields this valuable spicy root was separated from the genus *Amomum* by Mr Roscoe, and is now called *Zingiber officinale* after him by the late Dr Roxburgh in his valuable work, whose completion by his able successor, Dr Wallich, is so anxiously expected by all botanists and pharmacologists. Although the ginger is cultivated in all parts of India, it rarely flowers, and Dr Roxburgh never saw the seeds. The great quantity of starch found in the dried root by M. Planche is conformable to the chemical composition of the scitamineous roots, from several of which starch is extracted in great quantities as a popular aliment, especially from various species of *Curcuma*, as the *rubescens*, from the pendulous tubers of which the natives prepare a very beautiful pure starch, which is said to form a large portion of the diet of the inhabitants of Travancore ; the *leucorrhiza*, a native of Bahar, and the *comosa*, a native of Burma.||—(A. D. Jr.)

* Traité Elémentaire de Matière Médicale. 2d Edit. Paris, 1824. 3 Tomes, 8vo.
† Journal de Pharmacie, and Journal de Chimie Medical for 1827.
‡ Journal de Pharmacie, June 1823.
|| Flora Indica ; or Descriptions of Indian Plants, by the late William Roxburgh, M. D. F. R. S. E., edited by William Carey, D. D. F. L. S., to which are added Descriptions of Plants more recently discovered, by Nathaniel Wallich, M. and Ph. D.,

AMOMUM ZINGIBER.—Ginger is much used in India as a condiment for sauces, soups, and made dishes in general. In the colonies they pickle it in vinegar; they also make a preserve of it with sugar, which has an agreeable odour, and keeps well.—Ch. and R.

AMOMUM ZEDOARIA.—This article refers entirely to the long zedoary. Mention might also be made of the round zedoary *Kæmpferia rotunda*, *Curcuma zedoaria*, Roxburgh, and also of the yellow, sometimes mixed with the round. It was thought for a long time that these two roots were the product of the same plants. * It was also thought that the zedoary and the zerumbeth were from the same origin. † This opinion is not now admitted. It is more probable that these roots are the product of different plants. If Breynius is to be credited, the yellow zedoary, *zedoaria radice lutea*, is the *casumar*, *cassamuniar*, or *casmunar*. Zedoary, it is said, yields a volatile oil, which is bluish if a gentle heat be employed, and much deeper coloured when the heat has been strong. It is said that this oil contains much camphor. M. Morin of Rouen has analyzed zedoary. He has found in this root a resinous substance, some volatile oil, osmazome, and sulphur. ‡—Ch. and R.

Dr Roxburgh, in the Flora Indica, refers the true zedoary of the shops to his *Curcuma Zerumbeth*, the *C. aromatica* of Salisbury, the *Amomum Z.* of Koenig, indigenous at Chittagong, from which Calcutta is supplied with the root. The round zedoary he considers as the root of his *Curcuma Zedoaria*, the *Amomum Z.* of Linnæus. The *Kæmpferia rotunda*, Willd., which is very generally cultivated on account of the beauty of its flowers, furnishes neither species of zedoary. Its roots are two small for the round, and do not correspond with the long.—(A. D. Jr.)

AMYGDALUS COMMUNIS.—The volatile oil of bitter almonds crystallizes; it is very acrid, very bitter, heavier than water, (Vogel,) and is composed of two distinct kinds of oil; 2000 to 3000 form four grammes of it. According to M. Robiquet, || volatile oil of bitter almonds contains an azotiferous substance, which may be the active principle of this oil; but what has been accurately ascertained is, that the oil is not of an identical nature, and that the crystallizable part is peculiar and independent of the azotiferous substance. M. Lavini, professor at Turin, § considers azote as one of the elements of this oil, and thinks that, under certain

F. R. S. E., Superintendent of the Botanic Garden, Calcutta. 8vo. Serampore. The first volume was published in 1820, the second in 1824, which is all I have yet seen. These include the first five classes of Linnæus.

* Peyrilhe, Hist. Nat. Medical. † Hist. des Drogues: Pomet.

‡ Journal de Pharmacie for 1823. || Ib. Vol. viii. p. 293.

§ Recherches Phisico-chimiques, by Lavini. Translated from the Italian by A. Chereau. Journal de Pharmacie, Vol. ix. p. 296.

favourable circumstances, it might with hydrogen and carbon form Prussic acid, but that this acid fully formed does not exist in it. A water distilled from the *Laurocerasus* at the end of twelve years had not undergone any sensible alteration, (Chéreau,) and the smell was far from being weakened.

M. Boullay * has given an analysis of sweet almonds, and M. Vogel † of bitter almonds.

False ideas long prevailed concerning the chemical constitution of the emulsive seeds. Thus Fourcroy, in his great work, ‡ says expressly that all dicotyledonous seeds which contain oil also abound with mucilage and fecula. The first hint of their true constitution was given by Proust. || Boullay next observed, in his analysis of the berries of the *Menispermum cocculus*, § that although emulsive, they contained neither mucilage nor amylaceous fecula; and that, in regard to almonds, he had ascertained the inaccuracy of Fourcroy's assertion. In 1817 he published a detailed analysis of the sweet almond. The analogy of almond emulsion with animal milk is so strong, that almonds may almost be considered as concrete milk. The chief difference observable is, that the albumen of almond emulsion coagulates by heat alone, without the addition of acid or rennet.¶

About the same time Vogel of Munich was engaged in analyzing the bitter almond. The result was read to the Royal Academy of Munich in 1814, and coincided with that of M. Boullay. He found that other emulsive seeds had the same composition, viz. cucumber, melon, hemp, white poppy, pistachio nut, nut, and walnut. The bitter almond differed, however, essentially from the sweet almond, in containing Prussic acid, previously detected in it by Bohm and Schrader, and volatile oil. He observed that the volatile oil could be obtained separate from the Prussic acid; that when dissolved in water it imparted the taste and smell of prussic acid without the property of furnishing Prussian blue; and that when rectified over baryta, lime, or red oxide of mercury, it lost its fluidity on the contact of air, and formed white crystals, almost inodorous, and much less volatile than the fluid oil.**

M. Robiquet's paper is highly interesting also in a physiological point of view. He obtained from the volatile oil of bitter almonds two oils, one of which crystallized by the contact of air and the absorption of oxygen, while the more volatile oil was incapable of crystallization. The crystals contain no azote as an element, but the uncrystallizable oil a notable quantity. This oil was also highly deleterious, while the crystals were perfectly inert. The oil of the *Prunus laurocerasus* was analogous in every respect. Vogel also remarks, that a quantity of bitter almonds can be given in emulsion

* Journal de Pharmacie, Vol. iii. p. 320.
† Vogel, Journ. de Schw. Vol. xx. p. 59.
‡ Système des Connaisances Chimiques, T. vii. p. 320. Paris. An. ix.
|| Journal de Physique. Année, 1802. T. liv.
§ Bulletin de Pharmacie, T. iv. p. 34. Paris, 1812.
¶ Journal de Pharmacie, T. iii. p. 337. 1817.
** Ib. T. iii. p. 344.

with impunity, which by distillation with water would destroy life, showing the new arrangement of the elements by the action of heat. He likewise observed, that the ratafia smell was stronger in expressed oil of bitter almonds when they were slightly heated before expression. M. Planche also ascertained, that when deprived of their pellicle, the cold drawn oil had absolutely no smell, and could not be distinguished from that of sweet almonds. From these observations it may be concluded that the fixed oil is not organically combined in the almond, but exists in isolated masses or particles like the fat and oil in animals, or the starch in vegetables ; that the volatile oil is probably organically combined with the parenchyme, and that the fixed oil acquires the power of dissolving this organic combination in proportion to its increase of temperature.—(A. D. Jr.)

Amylum.—M. Raspail has published an excellent dissertation on starch, as observed by the microscope. * It appears from this, that fæcula does not consist of crystals, but of small, round, hard, and translucent grains, of a gray colour on the edges, and exhibiting the appearance of fine beads of mother of pearl. Every grain of fæcula is composed, 1*st*, of a smooth integument, not affected by acids at the ordinary temperature, and susceptible of being coloured by iodine ; 2*d*, of a soluble substance, which by heat loses the property of being coloured by iodine, and has all the properties of gum. Hence the gums which flow from vegetables are nothing but this soluble substance of fæcula, which has lost by exposure to the air the property of being coloured blue ; for it is not by a new combination, but by simple coloration, that fæcula receives from iodine a tint sometimes of violet, sometimes of indigo. The property of being coloured by iodine is owing to a volatile substance. There may exist in all vegetable substances yellow colours like the tincture of iodine, which are capable, by being spread over the surface of the grains of fæcula, of furnishing to that substance the property of transmitting the blue ray more or less combined.

MM. Raspail and Dumas, by using a microscope whose magnifying power extended, without losing its distinctness, to 400 or 500 diameters, were able to measure the diameter of the different grains which were observed in the same fæcula. By the table which they have drawn up it appears, 1*st*, that the fæcula of potatoes has the greatest variety in the diameter of its grains ; 2*d*, that the largest of the grains of the fæcula of wheat have only about one-third of the diameter of the grains of potatoe ; 3*d*, that maize has the most uniform grains ; 4*th*, that the smaller grains of wheat and of potatoe have the same dimensions and the same form. According to the same authors inulin does not differ

* Memoire sur les Graminées, l'ánalyse microscopique, et le développement de la fecule dans les Cereales. Paris, 1825.—Annales des Sciences Naturelles, p. 224 and 384. 1825.

much from fæcula, for it is in like manner composed of organized globules, but which have the smallest diameter observed in fæcula, not exceeding $\frac{1}{3}\frac{1}{0}\frac{1}{0}$th part of a millimetre.—Ch. and R.

M. Villars of Strasbourgh had previously published a very curious essay on the structure of the potatoe, * as seen by the microscope. He found the starch (farine) of potatoes formed of ovoid globules from $\frac{1}{1}\frac{1}{0}\frac{1}{0}$ to $\frac{1}{3}\frac{1}{0}$ of a line in diameter. Those of wheat starch were about one-third of the size, varying from $\frac{1}{2}\frac{1}{3}\frac{1}{0}$ to $\frac{1}{1}\frac{1}{0}\frac{1}{0}$. Those of potatoe were smooth, brilliant, and milky, like globules of mercury. When bruised upon a glass, they were reduced into square or irregular fragments, but still smooth. By boiling they were enlarged about a third, but seemed cracked on the surface. When viewed in a thin slice of frozen potatoe, they were seen disposed in contiguous groups in the meshes of a net-work of fibre, but not adhering to them. Wheat starch is less easily altered by heat than potatoe starch; it contains less water, which it parts with and recovers less readily. Therefore potatoe bread does not keep fresh above two or three days; wheat bread keeps from four to eight; and rye bread at least fifteen or twenty, or even a month, especially if the bran be not separated.

M. Planche having observed the remarkable lightness of some starch prepared by him from the root of the black radish, conceived that a comparison of the weight of equal volumes might serve to distinguish the fæcula of different vegetables. This led MM. Payen and Chevallier † to institute some experiments, and although the methods they employed were not susceptible of great accuracy, the results are instructive. They filled a dry bottle successively with different kinds of starch, and then with distilled water, and found that it held of water 1000; potatoe starch 800; wheat starch 794; and black radish starch 588. They next filled the same vessel successively with these starches, but instead of weighing them dry, they filled the interstices with distilled water, by which an approximation was made to the specific gravity, which now appeared to be 1530 in all the varieties tried. Hence it may be concluded, that the specific gravity of all starches is the same, and the difference of the weight of the same volume, when dry, is owing to the particular minuteness of their grains.—(A. D. Jr.)

Amylum.—Although all the starches are nearly identical, we may take notice here, 1*st*, of potatoe starch, which was believed before M. Raspail's observations, (and we must add that his new theory has found opponents whom he has to overcome,) a very obvious crystalline appearance, especially when seen by reflection of the sun's rays, or by the lens, and which is heavier than common starch; 2*d*, of oat starch; 3*dly*, of fæcula of lichen, ranked among the starches by Berzelius. Sago, salep, cassada, or tapioca and arrow-root, are also considered as starches. M. Payen has,

* Journal General de Medecine, T. xlii.

† Journal de Pharmacie, T. ix. p. 185. 1823.

however, ascertained, that all fæculas have the same density when weighed in water. Dr Bostock has found that the subacetate of lead produces a copious precipitate in the watery solution of starch. It has also been found by MM. Bouillon La Grange, and Vauquelin, that starch grilled until it requires a straw colour is modified, and becomes soluble in water at common temperatures. In this state it may be used in the arts in the same way as gum. Starch thus roasted burns like resins, and seems a kind of pyrophoric compound.*—Ch. and R.

M. Caventou, in an excellent paper upon starch and the different amylaceous articles of commerce, † has subjected M. Raspail's opinions to a strict but just critical examination, and ends with declaring his dissent from M. Raspail's conclusions, as to the grains of starch consisting of gum inclosed within membranes, of the colouring of starch by iodine not depending upon a chemical combination, and of its depending upon a volatile principle.

The observations made by M. Caventou eight years before, on various amylaceous substances, are highly interesting. Wheat starch is the prototype of these matters. They have in general been considered as essentially the same ; this, however, does not appear to be the case. Wheat starch is totally insoluble in cold water; but from various causes it may be so modified as to become more or less soluble. Saussure ‡ described the effect produced in a mixture of starch and water left together to undergo the process of spontaneous decomposition. They formed a paste, which by analysis contained sugar 47.4 ; gum 23 ; amidine 8.9 ; starch 4 ; and amylaceous lignin 10.3 = 93.6. To the modified starch he gave the name of *Amidine*. He obtained it with boiling water from the residuum of the paste which was left by alcohol and cold water. But Caventou shows, that the fermentation the starch had undergone was not necessary to its production ; for unfermented starch experiences the same modifications when it is boiled with water, or heated until it becomes of a pale brown colour, (British gum,) or treated with dilute sulphuric acid. The characters of amidine are, solubility in cold water, being precipitated by tincture of galls, and by acetate of lead, and not forming a jelly on cooling after being concentrated. The arrow-root *(Maranta arundinacea)* of the West Indies, and potatoe starch, agree with raw wheat starch in all respects, and, as is the case with it, no heat is employed in their preparation. But sago, *(Sagus farinifera,)* and tapioca, *(Jatropha manihot,)* are not varieties of starch but of amidine. They must, however, have been extracted from the plants in the form of starch, as the process is by washing with cold water ; but the modification is afterwards effected by the heat employed in the process of drying or slight torrefaction. Salep (*Orchis mascula*) is not an amylaceous substance, but analogous to gum tragacanth, containing a large proportion of bassorin.

* Bulletin de Pharmacie, Tome iii. pages 54 et 395.
† Annales de Chimie et Physique, Tom. xxxi. p. 337. Paris, 1826.
‡ Same work, T. xi. p. 379. 1819.

After the discovery of the characteristic property which starch possesses of being coloured blue by iodine, M. Robert * applied this test to a variety of roots. Besides these roots which are known to contain starch, he found it in *Pæonia officinalis,* (Ranunc.) *Colomba,* (Menisperm.) *Althæa off., Malva sylv.* (Malv.) *Trapæolum majus,* (Geran.) *Brassica Napus, Cochlearia Armoracia,* (Crucifer.) *Nymphæa alb.,* (Nymph.) *Glycyrrhiza glabra, Ononis spinosa,* (Legumin.) *Geum urbanum, Fragaria vesca,* (Rosac.) *Apium Petroselinum, Daucus Carota,* (Umbellif.) *Callicocca Ipecacuanha,* (Rubiac.) *Valeriana off.,* (Valerian.) *Convolvulus Jalapa, C. Turpethum,* (Convolv.) *Atropa Belladonna, Solanum tuberosum,* (Solan.) *Rheum palmatum, R. Rhaponticum, Rumex acetosa, R. Patientia,* (Polygon.) *Laurus Sassafras,* (Laurin.) *Aristolochia Clematitis, A. Serpentaria,* (Aristoloch.) *Urtica dioica, Humulus Lupulus,* (Urtic.) *Arum maculatum,* (Aroid.) *Galanga minor, Amomum Zingiber, A. Zedoaria,* (Drymyrrh.) *Iris Germanica, I. nostras,* (Irideæ.) *Smilax Salsaparilla, S. China,* (Smilaceæ.) *Tulipa Gesneriana,* (Liliac.) *Veratrum album,* (Colchic.) *Acorus Calamus,* (Juncaceæ.) *Aspidium filix mas,* (Filices.) He could find no starch in the roots of *Sinapis nigra,* (Crucif.) *Angelica archangelica,* (Umbell.) *Cichoreum Intybus, Leontodon Taraxacum, Inula Helenium,* (Compos.) *Symphytum off., Borago off.,* (Borag.) *Allium Cepa, A. Porrum, Scilla maritima,* (Liliac.)

By ultimate analysis by means of fire, chemists have attempted to ascertain the proportion in which the various elementary principles enter into the composition of nutritious substances. We must, however, consider the results as only approximative, for they differ, as stated by experimenters of such eminence as Berzelius, Thenard, and Prout. Dr Prout has lately published an admirable paper,† which greatly elucidates the action of alimentary and medicinal substances, especially the diversity of effects of analogous substances, and reconciles the observations of the vulgar and of practical men, with the recondite views of philosophic chemistry. Dr Prout is of opinion, that the principal alimentary matters employed by man, and the more perfect animals, may be divided into three classes, namely, the saccharine, the oily, and the albuminous. The last is characterized by the presence of nitrogen as a constituent; the second by hydrogen in excess, and the first by the oxygen and hydrogen entering into their composition in the proportions which constitute water. The term *saccharine* is therefore used in a very extended sense, and includes all amylaceous and gummy substances, as well as the varieties of sugar properly so called, and is nearly synonymous with vegetable aliments.

In commerce, imperfect sugars are called *low* sugars. Dr Prout has retained the epithet in the same sense, and has applied it also to the starches; thus pure sugar-candy is the highest, and sugar of honey the lowest well defined sugar; wheat starch the highest, and arrow-root the lowest starch.

* Journal de Pharmacie, T. iv. p. 537.

† Philosophical Transactions for 1827, p. 355.

It has been long known, from the very infancy of chemistry, that all organized bodies, besides the elements of which they are essentially composed, contain minute quantities of different foreign bodies, such as earthy and alkaline salts, iron, &c. These have been usually considered as mere mechanical mixtures accidentally present; but Dr Prout is satisfied that they perform very important functions, and that organization cannot take place without them. He has used the word *merorganized* (or partly organized) to designate substances in this state as partly, or to a certain degree organized. In this sense starch is merorganized sugar, both having essentially the same composition; but the starch differing from the sugar in containing minute proportions of other matters preventing its constituent particles from arranging themselves in the crystalline form, and causing them to assume totally different sensible properties.

Dr Prout has given a table of the ultimate analysis of several varieties of starch.

	Carbon.	Water.
Wheat starch,	37.5	62.5
Arrow root,	36.4	63.6
Lignin of boxwood,	42.7	57.3
——— of willow,	42.6	57.4
Sugar of milk,	40.	60.
Manna sugar,	38.7	61.3
Gum arabic,	36.3	63.7

Mr F. Marcet of Geneva * has examined, by ultimate analysis, the changes which wheat starch undergoes by roasting and malting. The elements of 100 parts of each were—

	Starch.	Roasted.	Malted.
Carbon,	43.7	35.7	41.6
Oxygen,	49.7	58.1	51.8
Hydrogen,	6.6	6.2	6.6

When correcting the proof of this sheet for the press, I first met with a reply by M. Raspail to the observations of M. Caventou, † to which I can at present only refer my readers.—(A. D. Jr.)

Anchusa Tinctoria.—The *Onosma echioides* furnishes a resin which has the same properties. The true alkanet of the southern parts of France is, according to M. De Candolle, a kind of gromwell, *Lithospermum tinctorium.* M. Pelletier ‡ has examined the properties of this plant, *(Lith. tinct.)* The bark of the root contains an extractive matter, and perhaps also ulmine. § Alkanet macerated in volatile alkali communicates to it an amethystine blue colour. || It is one of the properties of alkanet to turn blue with alkalies.—(Ch. and R.)

* Annales de Chimie et de Physique, Sept. 1827. T. xxxvi. p. 27.
† Annales de Chimie et de Physique, T. xxxiii. p. 241.
‡ Bulletin de Pharmacie, T. vi. p. 445.
§ Chemische Untersuchungen. Dritte Fortzetzung des chemischen Laboratoriums, von J. F. John. 8vo. Berlin, 1813. See p. 81.
|| Ph. Wirtemberg, 1760, p. 21.

Botanists and pharmacologists have confounded together the *Anchusa tinctoria* and *Lithospermum officinale*. The alkanet root of commerce belongs to the former, which grows in the Grecian Peloponnesus and in Cyprus, and is the Ανχουσα of Dioscorides, according to Sibthorpe and Sprengel. * It is chiefly imported by the way of Montpellier, and has been hence erroneously stated by authors to be a native of the south-west provinces of Europe, where the *Lithospermum tinctorium*, De Candolle, described as the *Anchusa tinctoria* by Linnæus and Willdenow, is actually found.

Sometimes the roots of the *Anchusa officinalis*, dyed with Brazil wood, are substituted for the alkanet. The deception is detected by the wood of the broken ends being coloured as well as the bark. In the genuine root the colouring matter is entirely situated in the bark.—(A. D. Jr.)

Angelica Archangelica.—This fusiform root grows in Lapland, Norway, Switzerland, the Pyrenees, and in Bohemia. Linnæus gives the preference to that of Lapland, when it has been collected in the spring, or at the end of autumn. It exhibits brilliant points in its fracture and small scales, if cut longitudinally, from the presence of a gum resin. Sometimes the root of the *Angelica sylvestris* is substituted for this. The difference is easily discovered. The former is not furnished with fibres as the latter; it is cavernous interiorly, very white outwardly; the taste slightly aromatic, and no acrimony is observable. Lamarck refers this species to the *Imperatoria*. The root of the *angelica* cultivated at Paris, in the king's garden, and dried carefully, has been found to resemble that brought from Bohemia. † Five hundred grammes of good root yielded four grammes of volatile oil.—Ch. and R.

Hayne (Getreue Darstellung, Bd. vii. n. 8, 9,) has given the diagnosis of the roots of these species more fully. "The root of the *A. sylvestris* is perennial, many-headed, with solid stock, whose length is much greater than its diameter; that of the *A. Archangelica* is biennial, never many-headed, stock cellular, and its length scarcely equal to its diameter." The virtues of the *sylvestris* are much weaker than those of the *Archangelica*. In drying, *Angelica* root loses three-fourths of its weight. Angelica root was analyzed by John (Chemische Schriften, Bd. iv. p. 126.) Its constituents were colourless, very volatile, and strong smelling etherial oil; gum 100.5; inulin 12; bitter extractive 37.5; resin of an acrid taste 20; peculiar principle soluble only in potass 22; woody fibres with a small portion of the preceding principle 90 = 282; water or loss 18 = 300. It appears that it is chiefly to the volatile oil, which this root contains in considerable quantity, that it owes its very peculiar strong smell and taste, and which must exert con-

* Hayne Getreue Darstelling, &c. 4to. Berlin, 1825. Xter Band, No. 11. Plate copied from Sibthorpe.

† *Ph. Francaise*, par Ratier, 1818.

siderable power on the living system. John suggests that a distilled water of *Angelica* should be made officinal, as there is certainly no other distilled water more strongly impregnated with volatile oil, or which affect the senses of smell and taste more powerfully.—(A. D. Jr.)

ANTHEMIS NOBILIS.—The chamomille flowers, at least those sold in France, are certainly those of the *Anthemis nobilis*, and not the flowers of the *Matricaria Chamomilla*. The flower of the chamomille becomes double by culture. It is proper to mention that it yields on distillation a volatile oil of a blue colour, or sometimes slightly greenish. If the distillation is carried on too long, what ultimately passes is yellow. The blue volatile oil of chamomille becomes yellow also at the end of a certain time; 4000 parts of Roman chamomille flowers yield a little more than 20 of volatile oil. In another experiment, 500 parts yielded 4.*—Ch. and R.

In France and in Britain the double flowers, that is those in which the radiant flowers are multiplied, and the discoid almost supplanted, are preferred; but in Germany the preference is justly given to the latter, as being more aromatic, and containing more volatile oil. Hayne distilled the same water, after the separation of the oil each time, from nine successive quantities of double chamomille flowers of twelve pounds each. The quantity of oil he got from each successive distillation was 360, 560, 550, 555, 600, 630, 660, 620, and 620 grains, or 10 oz. 5 dr. and 55 grains from 108 pounds of flowers. The oil was of a pale brownish yellow colour, verging to greenish.† Richard says, that besides the oil they contain a gummy resinous principle, camphor, and a small quantity of tannin. The difference of the taste and smell, the diversity of the oil and the absence of camphor, sufficiently show that the flowers of the feverfew (*Matricara Chamomilla*) should not be substituted for the Roman chamomille. They are easily distinguished by the receptacle, which in the latter is paleaceous, and in the former naked.—(A. D. Jr.)

ANTHEMIS PYRETHRUM.—Linnæus compared the flavour of the pellitory to that of the *Polygala*. Its acrimony appears to reside in a resin, or rather, according to Murray, in a butyraceous oil, which is extracted by distillation, and which is inodorous. The opinions of John merit the preference. M. Gautier analyzed pellitory in 1818. He found a yellow colouring principle, traces of a volatile oil, and *a fixed oil*, but the existence of the latter has been contested. He was also the first to find inulin. The inhabitants of Asia, as well as the ancient Romans, ate this root confected, and employed it for various economical purposes. It is also used to give strength (pungency?) to vinegar.—Ch. and R.

* Murray, Vol. i. page 224.

† Hayne getreue Darstelling, B. x. No. 47.

According to John's analysis, * the immediate principles in pellitory root are inulin (insipid) 120; gum (almost tasteless) 60; extractive (bitterish) 35; substance soluble in alkaline ley along with the woody part of the vessels 75; soft resin (of a very burning acrid taste) 5; volatile oil (with a very acrid taste, but almost inodorous,) a small quantity; camphor? alkaline carbonate, phosphate, muriate, and sulphate; carbonate of lime; phosphate of lime; phosphate of iron = 295; water and loss 5 = 300. John, and not Gautier, was therefore the first to discover inulin in the pellitory root. He even remarks that the quantity exceeds that found in the elecampane itself.

M. Gautier † observed, that by mere inspection of a longitudinal section of a pellitory root, a multitude of little vesicles may be seen. These contain its active principle. It was analyzed by subjecting it successively to the action of sulphuric ether, alcohol of 847 Sp. Gr. and water. His conclusion is, that it contains a trace of volatile oil; fixed oil 5; yellow colouring principle 14; gum 11; inulin 33; traces of muriate of lime; lignin 35, and loss 2 = 100. Its peculiar acrimony resides entirely in the fixed oil. It was extracted by the ether. It was reddish, strong smelled, insoluble in water, lighter than water, congealed by cooling, and became fluid by heat; formed with alkalies a soap, soluble in water and in alcohol, having an acrid burning taste, strongly exciting salivation, in the same manner as the root when chewed. After its extraction the root was almost insipid. Boullay, however, thinks that some of its properties have greater analogy with resin than with fixed oil. The inulin was deposited from the decoction on cooling.—(A. D. Jr.)

Antimonii Sulphuretum.—It may be doubted, as is stated in the Dispensatory, that lead has at any time been sold for sulphuret of antimony. That which may have been thus sold are varieties of sulphuretted antimony, which naturally contain sulphuret of lead. These are frequently met with, and prove hurtful to the processes to be performed with them.

M. Serullas, a very distinguished chemist, has published a very important paper on the existence of arsenic in the antimonial preparations used in medicine. According to him, antimony, even that which has undergone fusion five or six times repeated, its sulphuret, all the antimonial preparations, with the exception of tartar emetic and the butter of antimony, contain arsenic. It follows from this, that it is from tartar emetic, or the butter, (chloride of antimony,) that it is proper now to extract this metal for pharmaceutical uses. In order to prove the presence of arsenic, M. Serullas takes the regulus and the sulphurets, brought to the state of the gray sulphuretted oxide by roasting; he exposes them with an equal weight of supertartrate of potass in a close crucible to a well sustained fire for three hours. These alloys, on being brought

* Chemische Schriften, iv. Bd. Berlin, 1813. p. 126.
† Journal de Pharmacie, T. iv. p. 49.

into contact with water, are decomposed, and emit hydrogen gas, which carries off more or less of arsenic, which is made to deposit itself in the state of hydruret by burning the gas in test-tubes. In this way an estimate may be made of the quantity of arsenic contained in the substance examined.

M. Serullas also shows how the process of alloying is to be used for discovering arsenic in cases of poisoning by that metal. For this purpose, should the suspected matter be small in volume, it is to be dried as well as possible. It is afterwards to be mixed with forty or fifty grammes (parts?) of pure antimony, and as much cream of tartar. An alloy is then formed which should emit arseniated hydrogen, and by combustion hydruret, however small may be the quantity of arsenic present. But when the matter suspected is bulky, recourse must be had to washings and ebullition. The solution which results is mixed with potass. It is then evaporated to dryness, and the residuum is formed into an alloy. Should these first means of analysis fail in their object, the residuum of the washings must be treated with nitric acid and potass, until the animal or vegetable matters present are destroyed. The residuum dried is to be mixed with double its weight of pure antimony and of cream of tartar, and submitted to the operation of alloying.

Four grains of the oxide of arsenic, triturated and mixed with three pounds of an alimentary mass artificially prepared, yielded, by the manipulations described, an alloy sufficiently arsenical to show that the process will succeed with very minute quantities.* —Ch. and R.

The first decree of the Parliament of Paris against antimony was in 1566. The prejudice against it was for a time so strong, that an able Parisian physician, Paulmier, was expelled from the faculty in 1609 for having employed it. But by a revolution of opinion, not unusual in our profession, it was admitted by the faculty into the *Antidotarium*, published in 1637. It was much employed about 1650; but Guy Patin and some others considered it as a poison, and entitled a large register, *Martyrologe de l'Antimoine*. During this dispute the doctors of the faculty assembled on the 9th March 1666 to decide the point; on which occasion ninety-two voted for the admission of antimonial wine, and the Parliament authorized it by a decree of 10th April 1666.†

From M. Serullas's observations it appears that tartar emetic, even when prepared from arseniated antimony, contains no arsenic. This he ascribes to its crystallization, which, as a means of absolute depuration, rejects the arsenic into the mother water, in which it may be found by the usual processes.—(A. D. Jr.)

ARBUTUS UVA URSI, *Raisin d'ours*, *Busserole*.—The leaves

* Journal de Pharmacie, T. vi. p. 536. T. vii. p. 425.
† Ibid. T. viii. p. 38.

of this shrub are very analogous with those of the *Airelle rouge, Vaccinium vitis idœa*, red whortle-berry. Braconnot has observed that the greater part of the *Uva ursi* in commerce is nothing but the red whortle-berry. MM. Melandri and Moretti have analyzed * the *Uva ursi*, and have found in it tannin and gallic acid. These principles are not found in the *Vitis idœa*, which circumstance serves to distinguish the leaves of these two plants. Botanical generic characters of the *Uva ursi*:—Calyx short, with five divisions; corolla campaniform, elliptical, diaphanous at its base; berry with five cells. Specific characters: Corolla of a greenish white, with a purple edge. Fruit small, spherical, red, black, or white, containing five seeds; stem frutescent, a foot high; shrub evergreen.—Ch. and R.

Hayne has given a full diagnosis of these two plants (B. iv. N. 19, 20.) To the apothecary the differences of these leaves are most important. Those of the *Vitis idœa* are obovate, or roundish obovate; edges revolute; fine, cartilaginous towards the point; sparsely fine sawed, and dotted beneath. Those of the *Uva ursi* are longish obovate; edges pretty even, perfectly entire, reticulated beneath, and without any points. Sprengel, in his *Systema Vegetabilium*, refers the *Uva ursi* to the genus *Arctostaphylos* of Adanson.—(A. D. Jr.)

ARCTIUM LAPPA.—M. Guibourt states that the burdock contains a great quantity of inulin. Its stalk and leaves furnish potass by combustion; and they also contain nitrate of potass. The parenchyme of this plant, which is of a white colour, when cut transversely exhibits a spongy mass, which has an orbicular disposition. Although the root of the burdock formerly cured a king of France, Henry III. of a severe affection,† it has lost some of its reputation. It is used in slight herpetic affections and in syphilis.—Ch. and R.

Burdock roots are now quite obsolete in this country, and are no longer retained in any of our Pharmacopœias. Where they are used, they are indiscriminately collected from the *Arctium Lappa* and the *A. Bardana*, which Linnæus considered as varieties only, but which were ascertained by Willdenow to be distinct species.‡ Burdock root is externally black-brown, internally white; it has a nauseous smell and a sweetish taste. Its predominant constituent is mucilaginous. By drying it loses four-fifths of its weight.—(A. D. Jr.)

ARISTOLOCHIA SERPENTARIA.—By M. Chevallier's analysis § this root contains volatile oil, resin, gum, starch, a yellow bitter

* Bulletin de Pharmacie, Tome i. p. 59. Paris, 1809.
† Observ. de la Forest, Liv. vi. Obs. 47.—(? A. D. Jr.)
‡ Hayne, Vol. ii. Nos. 35, 36.
§ Journal de Pharmacie, Vol. vi. p. 565.

principle, malic and phosphoric acids. According to Bucholz * its components are as follows:—Volatile oil, 5; yellowish gum-resin, $28\frac{1}{2}$; extractive matter (Saponaceous, B.), 17; gummy extract, 181; woody fibre, 624; water, $144\frac{1}{2} = 1000$.

I have corrected the proportions of the ingredients obtained in Bucholz's analysis by reference to the original. Bucholz concludes that the characteristic constituents are the volatile oil,—which, however, exists in very small quantity,—and a soft resin, which has many of the properties of an oil, and is also bitter, as is still more remarkably the saponaceous extractive. Bucholz found that he could not separate the saponaceous principle entirely from the gummy extractive when they were dried, and that it was better to redissolve the extract in distilled water, so as to have the consistence of a syrup, and then to add absolute alcohol until the clear liquor was not affected by a further addition. By evaporation he now obtained the saponaceous extractive of a yellow brown, verging to red, strongly deliquescent, of a penetrating bitter taste, and almost entirely soluble in absolute alcohol.

Chevallier thinks that the active principle has much analogy with the bitter principle got from *Quassia amara* by Dr T. Thomson, and the principle obtained from Bryony root (*Bryonia alba*), and from colocynth (*Cucumis colocynthis*), by Vauquelin.†—(A. D. Jr.)

Arnica montana.—MM. Chevallier and Lassaigne have discovered in this plant a bitter nauseous matter resembling cytisine. This is without doubt the vegetable principle to which allusion is made in the Dispensatory. Martini found in *Arnica* a little volatile oil of a blue colour.

M. Dupuytren made experiments in the Hotel-Dieu at Paris, which establish that the emetic action of *Arnica* is caused by particles of down, which remain suspended in the infusion. If the infusion be filtered, the irritating action does not occur.

This plant is found abundantly in Portugal. ‡ It also bears the names of *Tabac des Vosges, Betoine de montagne, Doronic d'Allemagne.*

The various parts of the Arnica, although much employed on the continent, so that with the German boors it is justly entitled to the name of *Panacea lapsorum,* are as yet little used in Britain. From their introduction, however, into the recent edition of the Dublin Pharmacopœia, it is probable that they will attract more notice. The plant is rejected by all animals except the goat.

The flowers of the *Inula dysenterica, I. salicina, Hypochœris maculata,* and *Scorzonera humilis,* have been said to be substituted for those of the Arnica; but as Hayne (B. vi. N. 47,) well remarks, it

* Berlinische Jahrbuch für die Pharmacie, auf das Jahr 1807. 12mo. Berlin, 1806. p. 159.

† Annales du Museum d'Histoire Naturelle, T. viii. 4to. Paris, 1806. See p. 91.

‡ Ph. Portugaise, 1794, p. 13.

would be more difficult to distinguish them from those of the *Doronicum pardalianches* and *D. scorpioides*. The root of the *Betonica officinalis* and *Inula dysenterica* have been substituted for the roots. The diversity of the effects of different parcels of the flowers was long known; but Le Mercier* found that the acrimony of some of them was owing to the larva of an insect which frequently occurs in them. These larvæ were by Buchner† found to belong to the *Atherix maculatus*. They were black, oval, about the size of mouse-dung, friable when dry, and contained a pale yellow clammy substance, which has an acrid taste. Le Mercier obtained from them an acrid principle soluble in alcohol and in ether.—(A. D. Jr.)

Arsenicum.—The sp. gr. of arsenic and of its oxides has been lately determined by M. Guibourt. That of the metal is 5.959. —Ch. and R.

Arsenici oxydum.—The general characters of this oxide are, its weight, vitreous aspect, volatility, insolubility in cold water, and the smell of garlic, which it exhales in emitting white vapours, when put on burning charcoal. It ought to be observed that it is not a constant character of the oxide of arsenic to redden tournesol. To detect this oxide, if the quantity of the substance containing it be small, it is to be dissolved in boiling distilled water; and if it be bulky, it ought, in the first place, to undergo the necessary washings. In every case filter the solution, and put a small portion of it into two conical glasses. Into the one pour some drops of the ammoniacal sulphate of copper in solution, which produces in the liquor a green precipitate, if it contains arsenic. This precipitate was formerly denominated Scheele's green. Into the other glass, also containing some of the suspected solution, pour some hydrosulphuric acid (sulphuretted hydrogen,) which will form a yellow precipitate if it contain arsenic. This precipitate, being sulphuret of arsenic, ought to redissolve rapidly in ammonia. Instead of the sulphuretted hydrogen, a hydrosulphate (an alkaline hydrosulphuret) may be employed, adding at the same time some drops of nitric acid. The precipitate is in like manner recognizable from its bright yellow colour. It is to be noticed, that, if the solution is very dilute, the deposit does not take place for some hours. Reduction is afterwards employed to confirm the identity of the poison; but there are few poisonous substances, according to M. Orfila, which act as the oxide of arsenic does on the two reagents which have been mentioned. Orpiment and realgar heated to redness with potass emit arsenical vapours which smell of garlic; but the first is yellow, and the second is red. Cobalt, or *poudre aux mouches*, is blackish. It

* Annales de Chimie, T. 77, p. 137. † Repert. B. iii. p. 295.

also gives alliaceous fumes when thrown on live coals ; and it becomes green when it is left in a solution of ammoniaco-sulphate of copper.—Ch. and R.

It is a very general error, even of the best chemists on the Continent, to enumerate among the characters of the oxide of arsenic, its vapours having an *alliaceous* odour. The fact is, that the vapour of the oxide of arsenic has *no* smell. It is the vapour of metallic arsenic only which has the alliaceous odour. Hence the fumes of white oxide of arsenic thrown upon red hot charcoal have an alliaceous smell, because it is reduced ; but the vapour of oxide of arsenic, produced by putting it upon hot silver has no smell, because it is not reduced.

As an addition to the preceding note, the translation of a passage and note from the fourth edition of the London Dispensatory, by Dr A. Todd Thomson, 1826, p. 193, has been inserted. I therefore take the liberty of transcribing it from the original.

" Into the suspected solution stir a moderate quantity of charcoal powder ; allow it to settle ; then pour off the clear supernatant fluid, or filter the mixture ; and when the powder which remains on the filter is dry, sprinkle some of it on a red hot poker. If the solution contain arsenic, the odour of garlic will be rendered sensible. This effect becomes more obvious if a few grains of dried subcarbonate of potass be added to the dried charcoal powder.

" To ascertain the delicacy of this test the following experiments were made :—*Exp.* 1. Half a drachm of white oxide of arsenic being boiled in two ounces of water, and the fluid filtered when cold, it was found to retain twenty-eight grains of the white oxide in solution.—*Exp.* 2. One drachm of this solution being mixed with two ounces of water in a cylindrical glass vessel, so as to form a solution which contained about one part of the oxide for 592 parts of water, a scruple of finely-powdered charcoal was added ; and the mixture being well agitated with a glass rod, and allowed to settle, was filtered. The powder, when dry, on being thrown upon a red hot shovel, emitted a *very faint* odour of garlic.—*Exp.* 3. The same as the former, except that two drachms of the solution were employed, making the proportion of the white oxide to the water in the diluted solution as 1 to 286, the garlic odour was *very perceptible.*—*Exp.* 4. Four drachms of the arsenical solution being employed, making the proportion of the white oxide to that of the water in the diluted solution as 1 to about 143, the garlic odour was *extremely strong.* From these experiments it is evident that this test will detect arsenic in any solution strong enough to act as a poison."

No person at all acquainted with juridical medicine would rest satisfied with such a mode of examining liquids suspected to contain arsenic, nor indeed would he have recourse to it as a corroborative testimony, as, without other evidence, it would prove nothing, and by other evidence certainty is more easily obtained.

The proper mode of conducting such investigations, and the great delicacy of which they are susceptible, are now well understood ; and

to this general diffusion of the knowledge and improvement of an important and truly practical branch of our professional occupation, we are chiefly indebted to the science, zeal, and perseverance of my able successor and colleague, the present Professor of Medical Jurisprudence in this University. His various papers on the subject contain the most satisfactory information, and show, that in skilful hands the most minute quantity of arsenic cannot escape detection.*

ARTEMISIA ABSINTHIUM.—Wormwood has been analyzed by M. Braconnot, † and by Kunzemuller. ‡ Beer made with wormwood intoxicates more quickly. Its digestive properties are well known to gastronomes. Besides this species of wormwood there are others, such as the wormwood of the Alps, or *Genepi*, *Artemisia rupestris*, *A. atrata*, *A. nana*, sea wormwood, *Artemisia maritima*, and the small wormwood, *A. pontica*.—Ch. and R.

For some years past the roots of the common wormwood have been much used in Germany for the cure of epilepsy. They were first introduced to the notice of the profession by Hufeland in his Journal for April 1824, on the authority of Dr Burdach. The root is collected in autumn, after the stem dies, or in spring, before it shoots. The earth is removed by shaking and beating the roots, which are then dried without being washed. The hard woody stock-root, and all mouldy and decayed parts, are removed, and only the side branches of the root are preserved for use, which are distinguished by their smell, and paler colour, and more juiciness. They are spread out upon paper and dried in the shade; and as soon as they become brittle and friable, they are carefully put up. It is not recommended to keep wormwood root long in the state of powder, for it soon loses its smell. Even the fresh powder has less smell than the entire roots; and Dr Burdach is in the habit of sending to his patients the root entire, with directions to powder it as it is wanted. Its use requires no preparation of the patient. For an adult the dose is a heaped tea-spoonful of the powder, or from fifty to seventy grains. This is given in some warm beer, half an hour before the paroxysm is expected. The patient is put to bed, covered up warm, and gets some warm diluent; and if sweating should follow, so much the better. After this has spontaneously ceased, the patient must put on fresh warmed linen, and guard against cold. If the first dose should not prevent the paroxysm, another is to be taken half an hour afterwards. The remedy is to be continued as long as any symptom of the disease remains; but it should not be repeated oftener than every second day. If a third and increased dose, such as ʒiss, does

* On the detection of minute quantities of arsenic in mixed fluids. Edinburgh Medical and Surgical Journal, 1824, Vol. xxii. p. 60. See also Vol. xxviii. p. 441; Vol. xxviii. p. 94; Vol. xxix. p. 23.—An account of several cases of poisoning with arsenic, in illustration of the delicacy of the chemical evidence, and weight of the evidence drawn from the symptoms. Transactions of the Medico-Chirurgical Society of Edinburgh, Vol. ii. p. 273. Edinburgh, 1826.

† Journal de Physique, lxxxiv. 341.

‡ Annales de Chimie, Vol. vi. p. 35.

not produce a critical sweat, some *Spt. ammoniæ succin.* or a warm infusion of Arnica flowers, or of valerian or serpentaria roots, may be taken to assist it.*—(A. D. Jr.)

Asarum Europæum, *Asarabacca, Oreille d'homme,* has been analyzed by MM. Lassaigne and Fenueille, who have found in it camphor, an emetic principle, a greasy oil, citric acid, gum, and starch.† Gorz, besides an etherial oil, also procured a camphoraceous matter by distilling the fresh root with water. MM. Thiebaud of Berneaud and Tenore recognize the *baccaris* of Virgil, which was formerly used in making crowns, in this *Asarum.* Its stalks are adorned with leaves nearly similar to those of the ivy. *Asarum* is found in all mountainous parts of the peninsula.

Asphaltum.—Asphaltum may be employed in embalming. The celebrated Egyptian mummies were impregnated with a solution of asphaltum. Klaproth has published an analysis of this substance, which is supposed to be the principal ingredient in the Greek fire. ‡ Asphaltum was the basis of the varnish which Stradivarius used for his violins. One part of asphaltum, dissolved without heat in five parts of rectified petroleum, gives a blackish-brown liquor, which, when dried with care, leaves the asphaltum in the form of a black shining varnish. Asphaltum has been retained in the new French Pharmacopœia. Consult the very curious and interesting researches of M. Virey upon asphaltum.§ —Ch. and R.

Klaproth analyzed the asphaltum of Avlona in Albania. It occurs in thick beds, grayish black, breaks short, opaque, externally and internally moderately shining, lustre greasy; fracture imperfectly flat conchoidal; fragments sharp-edged; feels somewhat greasy; is soft, scissile, and light. Sp. gr. 1.205; burns with a strong and lively flame, and is considered to be the chief ingredient of the Greek fire. It is soluble in the oils and artificial naphtha. With sulphuric ether it forms a clear brown solution, which on evaporation leaves a brown-red thick extract. Absolute alcohol has no action upon it. The acids and boiling caustic ley do not dissolve it. By destructive distillation 100 grains yield 36 cubic inches of hydrocarbonate gas; 32 grains of bituminous oil; 6 of weak water of ammonia; 30 of charcoal; 7.5 of siliceous earth; 4.5 of alumina, 0.75 of lime; 1.25 oxide of iron; 0.5 of oxide of manganese.—(A. D. Jr.)

* Hufeland's Journal, 1824, April, p. 78; May, p. 114; December, p. 20, 26,—confirmation of its good effects, by Dr Wagner. In the subsequent numbers there are other communications on the subject. The drying of the roots without washing them seems to me a valuable improvement, which may be taken advantage of in all cases where the active principle is very soluble in cold water; for example, the whole virtue of sarsaparilla is readily extracted by cold water, and the root rendered effete.

† Journal de Pharmacie, Vol. vi. p. 561.

‡ Klaproth's Beiträge, Bd. iii. p. 316.—Watson's Chem. Essays, iii. p. 4.

§ Journal de Pharmacie, Vol. viii. p. 235.

Atropa Belladonna, *Belle dame.**—M. Brera, professor at Padua, published in 1820 the results which he obtained by administering belladonna in large doses in cases of hydrophobia.† According to D. Barbier, belladonna has not fulfilled in such cases the expectations of practitioners.—Ch. and R.

Melandri discovered in the leaves of the belladonna superoxalate of magnesia, also oxalate of lime, muriate of potass, a soft green resin, an animal extractive, mucus, and oxygenizable extractive. In the berries he found a colouring matter, a test of acids and alkalis almost as sensible as the tincture of the *Alcea purpurea*. If alcohol be poured upon the expressed juice of the ripe berries, the purple colour is at first precipitated along with the mucus. By carefully washing the coagulum with the same alcohol a tincture is obtained, which, diluted with alcohol until it has no sensible colour, becomes green with alkalis, and red with acids. After some time the purple tincture becomes yellow; but it still serves as a delicate test.

Vauquelin concluded from his analysis that the juice of belladonna contained an animal (*azotiferous*) substance, which partly coagulated by heat, and partly remained in solution by the action of the free acetic acid present; a substance soluble in alcohol, of a bitter and nauseous taste, which by combination with tannin becomes insoluble, and furnishes ammonia by destructive distillation; several salts with potash for their base; nitrate, muriate, sulphate, superoxalate, and acetate. He ascertained by experiment that the principle soluble in alcohol produced the narcotic effects of the belladonna. It is, however, chiefly to Brandes that we are indebted for an accurate knowledge of the narcotic principle of belladonna. The results of his minute analysis are inserted in the last edition of the Dispensatory. He afterwards observed that magnesia readily forms triple compounds with the alkaloids, and that this is probably the case with atropia. Döbereiner also pointed out that the extract of belladonna, and also that of hemlock, gave a precipitate with ammonia, which was nothing else than phosphate of magnesia. ‡

Peschier of Geneva§ likewise examined the decoction of the herb. Besides the alkali he got an acid which retained the phosphate of lime in solution, and formed crystallizable salts with potass and ammonia.

Runge|| also made some observations on belladonna. He operated upon 400 lb. of the leaves. He precipitated the decoction by Goulard's solution of lead, filtered the mixture, precipitated the greater part of the lead by sulphuric acid, and the remainder by sulphuret-

* Extrait d'une lettre de M. G. Melandri à M. Boüillon Le Grange. Annales de Chimie, T. lxv. p. 222. Paris, 1808.—Analyse de la Belladone, Atropa Belladonna, par M. Vauquelin. Annales de Chimie, T. lxxii. p. 53. Paris, 1809.—D. R. Brandes, Chemische Untersuchung der Tollkirchenkrautes, und Entdeckung der Atropium, eines neues Alkaloides. See Buchner's Repertorium, B. viii. p. 289; B. ix. p. 71. 1820.

† Atti della Societa Italiana delle Scienze, Vol. xviii. Modena, 1820.

‡ Buchner's Repert., B. x. p. 129.

§ Trommsdorff's neues Journal der Pharmacie, Bd. v. p. 89.

|| Anal. de Chim. et de Phys. T. xxvii. p. 32. Also in Buchner's Repertorium, Bd. xix. p. 408.

ted hydrogen. He evaporated the fluid to dryness, acted upon the extract with a mixture of one part of ether and four of alcohol, filtered the solution, evaporated and dissolved the extract in water. The solution (acetate of atropia) was pale yellow, and a single drop caused lasting dilatation of the pupil. When he decomposed the solution by lime water, the narcotic principle seemed to be decomposed, but not when he employed magnesia; and for this purpose he recommends, instead of the caustic magnesia commonly employed, the hydrat of magnesia got by precipitating sulphate of magnesia by solution of potass.

The extract of belladonna is employed by empirics to produce apparently miraculous effects in restoring vision for a time in some cases of cataract. The imposition was fully exposed by Dr Hill. *

Hahnemann of Leipsick first asserted in 1807 the pretended power of belladonna in preventing the communication of scarlatina, † and his statement has been supported by other German practitioners. Dupuytren gives it internally in scrofulous ophthalmia and in *retinitis*. ‡ Lastly, Dr Reisinger suggests the use of atropia instead of the extract of belladonna; and his experiments tend to prove that the isolated principle is merely narcotic or sedative, while the entire extract is at the same time considerably stimulant. §—(A. D. Jr.)

Boletus igniarius.—According to Bulliard, it is the *Boletus ungulatus*, and not the *B. igniarius*, which is employed in making the German tinder, *Amadou*. This boletus, whilst young, has the flesh thready and soft.|| The *Amadouvier*, which is the name which ought to be given to this boletus, is principally found on the oak, and also on the birch, beech, elm, hornbeam, ash, walnut. That of the oak is preferable.—Ch. and R.

This fungus is also called *Polyporus fomentarius* by Fries and some other cryptogamists. It is variously prepared for use. The outer coat is removed by means of a knife, and the spongy yellowish substance beneath is cut into thin slices, and beat with a mallet to soften them, until they can be easily torn into pieces, in which state it is employed for surgical purposes. To fit it for tinder it is boiled in a solution of nitre or of gunpowder, then dried, and beat anew. Some writers recommend the use of chlorate of potass instead of nitre, which causes it to burn faster. It was analyzed by Bouillon Legrange, who found it to contain an extractive; a very small quantity of resin; a small quantity of animal matter, muriate of potass,

* Ed. Med. Surg. Journal, Vol. xviii. p. 435.
† Ibid. Vol. xxiii. p. 224; Vol. xxv. p. 242.
‡ Ibid. xxiv. p. 427.
§ Ibid. Vol. xxvi. p. 276.
|| Bull. tab. 401 and 491, fig. 2. Flore Française, p. 117. (I have not been able, from not having access to these works, to verify the reference; but the latter work of Bulliard referred to should probably be *Herbier de la France*.—(A. D. Jr.)

sulphate of lime; and by incineration it yielded phosphate of lime, phosphate of magnesia, and iron. *—(A. D. Jr.)

Galbanum.—Galbanum has a strong and disagreeable odour, not at all alliaceous. In this respect it is distinguished from sagapenum. Its components, according to M. Pelletier,† are: Resin, 66.86; gum, 19.28; wood and impurities, 7.52; volatile oil and loss, 6.34; super-malate of lime, some traces. A volatile oil, of a fine indigo blue, is obtained from galbanum. It preserves this colour in alcohol; neither acids nor alkalies change it. It is necessary in distilling it with the naked fire to manage the heat very carefully, in order to obtain this oil.—Ch. and R.

Camphora.—The method of purifying camphor is detailed in a memoir by Proust, ‡ and more recently by M. Clémandot. §—Ch. and R.

Cantharides, *Meloe vesicatorius*, Lin.; *Cantharis vesicatoria*, Oliv.—M. Chereau has proved that the green and gold matter which composes the elytra of cantharides is insoluble in water, alcohol, or ether, whether hot or cold, as well as in oils. He dried cantharides; he even scorched them; yet the golden matter resisted in a great measure this treatment, and it only completely disappeared on calcination. It follows that cantharides, as he ascertained, may be deprived of their active and soluble principles, and yet yield a powder having the principal external character of the powder of cantharides. When cantharides previously dried were thrown into a crucible, they emitted suffocating fumes; afterwards the mass inflamed; it disengaged apparently phosphuretted hydrogen gas; the cinders after two hours of calcination were blackish; water poured on them assumed a greenish colour, and the odour of sulphuretted hydrogen was perceived. ||—Ch. and R.

The proposal of M. Limousin Lamothe to employ worm-eaten cantharides *(vermoulures des cantharides)* for the making of blistering plaster, has given rise to much investigation by the French pharmaceutists. ¶ MM. Hottot and Tassart contradicted this proposal in a report to the Pharmaceutical Society;** and in a debate, which took place on a note upon the same subject by M. Derheims, it was generally agreed, that, 1. cantharides reduced to powder by mites is less active in proportion to the number of mites mixed with them; 2. the cantharides do not lose their efficacy by their being reduced to powder by mites; 3. the mites by themselves have no vesicating action; 4. it is advantageous to preserve cantharides from the mites; 5. mited cantharides cannot be advantageously employed.††

* Dictionnaire des Drogues.
† Bulletin de Pharmacie, T. iv. p. 97.
‡ Annales de Chimie, Vol. iv. p. 189.
§ Journal de Ph. Vol. iii. p. 353.
|| Unpublished experiments.
¶ Journal de Chem. Med. T. ii. p. 143.
** Ibid. T. ii. p. 253.
†† Ibid. T. ii. p. 401.

CASSIA SENNA.—M. Rouillure, apothecary, who was one of the expedition to Egypt, has made us well acquainted with senna.

First species, *Sené du Levant, de Scyde, de Lapalte*, which belongs to the *Cassia lanceolata*. Leaves alternate, pointed, of a deep green; smell somewhat agreeable; taste a little acrid and bitter. This senna is found some leagues above Syène, in a valley called Bicharie, in Abyssinia and Sennaar.

Second species belongs to the *Cassia senna*, (*C. obovata.*) Leaves broader than the preceding, rounded, of a pale green colour; taste sweetish, and without smell. Is found in Upper Egypt; less purgative than the former.

These two species are mixed in commerce, and also with a third leaf, which is not a senna, but a species of *Apocynum*, designated by MM. Rouillure and Delisle, under the name of *Cynanchum Argel*, or *Cynanchum oleifolium*. The leaves of this last are alternate, narrow, pointed, and covered with asperities, of a pale green colour, taste acrid, bitter, and nauseous.

The general mart for senna is Boullac, near Grand Cairo, where they mix the senna in the following proportions:—Lanceolated senna, 500; obovate senna, 300; and argel, 200 parts.

What is called *Grabeaux de sené*, contains little real senna.

Senna has been analyzed by MM. Lassaigne and Feneulle, who have called its purgative principle cathartine. *—Ch. and R.

By far the greater part of the senna of commerce in Britain is called East Indian senna, although it is not the growth of the East Indies. Dr Adams of Calcutta informs me, that the senna used in India is known in the bazars by the title of Senna Mukkhior Mekki, which is enumerated by Colladon among the synonyms of the *C. lanceolata*. It is imported from the Persian Gulf, and is probably the growth of the Arabian shore near Mekka. From Calcutta it is re-exported to London. A specimen sent to me by Dr Adams differs in no respect from the East Indian senna of the shops. The small quantity of senna which is the produce of the East Indies is blunt pointed, and very inferior in quality.—(A. D. Jr.)

CERA.—Wax, according to Bonnet, John Hunter in 1791, and Huber, † is not a vegetable production. It is formed by the bees. It is a kind of concretion which takes place upon the scaly rings which cover the posterior parts of this hymenopterous insect. It is true that M. Proust, who discovered wax in the leaves of the cabbage, and as forming the bloom upon the skin of plumbs, grapes, oranges, &c. has advanced another opinion, but the former is nevertheless to be preferred, since bees fed with sugar alone produce a great deal of wax.

Wax has been analyzed by M. de Saussure. ‡ It contains two

* Annales de Chimie et de Physique, Vol. xvi. p. 22.
† Journal de Phys. 1804.
‡ Annales de Chimie et de Physique, Vol. xiii. p. 340.

different substances according to John, * which are unequally soluble in alcohol, *Cerine* and *Myricine*.—Ch. and R.

Saussure found that purified wax melted at 145° F. Its density when solid was 0.966, when melted at 178°, 0.834, and at 201°, 0.8247. By destructive distillation it seemed to consist of carbon, 81.607; hydrogen, 13.859; and of oxygen, 4.534 = 100. The analysis of Gay-Lussac and Thenard is very near this. They got carbon, 81.79; hydrogen, 12.67; and oxygen, 5.54. Wax may therefore be represented by oxygen and olefiant gas.

John's discovery of cerine and myricine was read to the Natural History Society of Berlin in 1812, and was published in 1813. † The comparative properties of cerine and myricine, as established by Bucholz and Brandes, are inserted in the last edition of the Dispensatory. ‡ John considers bees-wax as chemically identical with the wax obtained by boiling the berries of the *Myrica cordifolia* of South Africa in water. This again seems to be identical with the wax of the *M. cerifera* of Louisiana. § Wax is also formed in the rings made by the falling off of the leaves of the gigantic palm, *Ceroxylon andicola*, first mentioned by Mutis, and described by Humboldt. || The pollen of flowers was also found by Vauquelin to consist chiefly of wax.

M. Delile has recently ¶ made us acquainted with another wax-bearing plant, the *Benincasa cerifera* of Savi, belonging to the family of *Cucurbitaceæ*. It is a native of China, but ripens its fruit in the south of Europe. This attains the length of eighteen or twenty-four inches, and a diameter of ten. As it approaches to maturity, the down with which it is covered falls off, and is replaced by a glaucous, resinous, inflammable powder, which may be scraped off, or washed off by a piece of linen moistened with alcohol, in which it is collected as an undissolved precipitate.

CERA.—According to M. Delpech, wax is also adulterated with potatoe starch. ** M. Boullay has pointed out the means of making use of wax thus adulterated. ††—Ch. and R.

The method proposed by Boullay for purifying wax adulterated with starch is to add two *per cent.* of strong sulphuric acid, to mix, and then wash carefully. The sulphuric acid acts in this case as in the purification of oil, by carbonizing the amylaceous matter without acting upon the wax.—(A. D. Jr.)

CINCHONA CORDIFOLIA, *Calisaya*.—The accuracy of this denomination in Spanish commerce is not yet ascertained.

* John's chemische Schriften, Bd. iv. p. 51.
† Ibid. Bd. iv. p. 38.
‡ Buchner's Repert. Bd. iv. p. 145.
§ Cadet, Annales de Chimie, T. xliv. p. 160.
|| Plantæ Æquinoctiales, T. i. p. 1.
¶ Mémoires de l'Academie Royale des Sciences de l'Institut. de France, T. vii. p. 395. 4to. Paris, 1827.
** Journal de Pharmacie, Vol. vi. p. 539.
†† Ibid. Vol. ix. p. 269.

The calisaya is sold under three different names :—Calisaya arrokada, yellow quilled bark; Calisaya de Plancha, flat yellow bark; Calisaya de Santa Fé, also flat yellow bark. That of Plancha is most used ; it is also the best.

Characters : Pieces large, being several lines thick, one or two inches broad ; some slightly curved, almost entirely deprived of its epidermis ; fracture very unequal, presenting very long filaments, and particularly in its anterior part. On breaking the bark a very fine fibrous, microscopic, powder falls out. The powder obtained by pulverization is of a pale yellow colour, and full of small filaments. Jesuits' bark is best pulverized in a mortar. Taste more decidedly bitter than that of the others, and not followed by astringency.—Ch. and R.

Notwithstanding that all the British colleges agree in the botanical species of *Cinchona,* from which the commercial varieties of bark are derived, there is no satisfactory evidence that they are right; on the contrary, it is almost certain that in regard to some of them they are wrong. I have been led to this conclusion chiefly from an accurate perusal of the work of M. Von Bergen, * a drug broker in Hamburgh, which is the most perfect specimen of pharmacography that has been published. He describes eight commercial varieties of cinchona bark.

1. China rubra : *Germ.* Rothe China. *Span.* Quina roxa ; Quina colorada. *French,* Quinquina rouge. *English,* Red bark. It occurs both in flat pieces and in quills. It is all imported into Europe by way of Cadiz, in whole chests, never in seronnes. It is generally ascribed to the *Cinchona oblongifolia,* but M. Von Bergen is satisfied that this is an error, and that it is not yet ascertained what species of *Cinchona* yields the red bark of commerce. 1*st,* Red bark is described by Ruiz and Pavon, but neither of them knew the species from which it was obtained. 2*d,* The bark of the *C. oblongifolia,* (*Quina roxa,* or *Flor de Azahar* of Santa Fé,) is repeatedly mentioned by them as quite different from the commercial red bark, (*Quina colorada.*) 3*d,* Von Bergen found in Ruiz's collection of barks specimens from *C. oblongifolia,* so different from our red bark, that they could not possibly come from the same species. 4*th,* These specimens were identical with the common *Cinchona nova* of Santa Fé. See No. 5.
2. China Loxa : *Germ.* Kron-China. *Span.* Quina de Loxa; Q. de Loxa corona; Cascarilla fina; C. fina de Uritusinga. *French,* Quinquina couronne ; Q. de Loxa. *English,* Crown bark. Occurs always in quills, never in flat pieces. M. Von Bergen agrees with other authors in considering it to be ascertained that crown bark is the bark of the *Cinchona Condaminea* of Humboldt.
3. China Huanuco : *Germ.* Graue China. *Span.* Quina provinciana ; Q. Huanuco ; Q. Guanuco ; also frequently Q. Huamalies. *French,* Quinquina Huanuco ; Q. gris. *English,* Silver Huanuco. Occurs in

* Versuch einer Monographie der China. 4to. Hamburgh, 1826. With eight coloured plates, and ten tables, imperial folio.

quills; no proper flat pieces. Von Bergen considers the species furnishing this variety as not yet ascertained, and rejects the opinion of Hayne, who ascribes it to the *Cinch. cordifolia,* and of M. Virey, who gives it to the *Cinch. glandulifera.*

4. China Regia: *Germ.* Königs-China. *Span.* Quina Calisaya. *French,* Quinquina Calisaya; Quinq. royal. *English,* Yellow-bark. Occurs in quills and flat pieces, the latter consisting almost entirely of splint. This variety is commonly ascribed to the *Cinchona lancifolia;* but Von Bergen found in the Ruiz collection barks from *C. lancifolia, C. lanceolata,* and *C. nitida,* all of which were entirely different from our yellow bark, and which proved that it was not the bark of any of these species. See No. 9.
5. China flava dura: *Germ.* Harte gelbe China. *Span.* Quina de Santa Fé; Q. de Cartagena dura. *French,* Quinquina de Carthagène ou flava dur. *English,* Hard Carthagena bark. Occurs in quills and flat pieces, and is ascertained to be produced by the *Cinchona cordifolia.*
6. China flava fibrosa: *Germ.* Holzige gelbe China. *Span.* Quina de Santa Fé, or Q. de Cartagena lenosa, (fibrosa.) *French,* Quinquina de Carthagène fibreux, ligneux. *English,* Woody Carthagena bark. The species furnishing this variety is not ascertained; but the two kinds of Carthagena bark are often confounded, and have got a variety of names, as *China Bogotensis, Ch.* of Santa Fé, *Ch.* of Havanna, *China amarilla, Ch. naranjada, Quinquina orangé, China lutescens, &c.*
7. China Huamalies: *Germ.* Braune China. *Span.* Quina Huamalies, or Huanuco. *French,* Quinquina Huamalies. *English,* Rusty bark. The species furnishing this variety is unknown.
8. China Jaen: *Germ.* Blasse Ten-China. *Span.* Quina piura. *French,* Quinquina Jean. *English,* Ash bark. Is the bark of the *Cinchona ovata* or *pubescens* of Vahl.
9. China pseudo-loxa: *Germ.* Dunkele Ten-China,—only of late distinguished in Hamburgh as a distinct variety, but has probably been long sold as crown bark, to which it has much external resemblance. It is the bark of the *Cinchona lancifolia* of Mutis, of which *C. nitida* and *lanceolata* are synonyms.

Coccus cacti.—Besides the adulterations of cochineal mentioned in the Dispensatory, M. Boutron Chalard has pointed out* another by means of Venice talc.

The chemical examination of cochineal has also been made by MM. Pelletier and Caventou. † They gave the name of *carmine* to the colouring principle. John calls it *coccinelline,* which latter denomination has prevailed. Four species of dying or medicinal cochineals are enumerated: 1*st,* The cochineal of the Indian fig, *Coccus cacti coccinelliferi,* Lin. and Fabric. 2*d,* Kermes or scarlet grains, *Coccus ilicis,* Fabric. 3*d,* The scarlet grains of Poland, *Coccus Polonicus,* Lin. 4*th,* The cochi-

* Journal de Pharmacie, T. x. p. 46. † Ib. T. iv. p. 193. 1818.

neal of lac, *Coccus ficus*, Fabric. M. Virey has given the characters of these four species. *—Ch. and R.

In commerce two kinds of fine cochineal occur, *Cochenille mèsteque*; one called *Cochenille noire*, and the other *C. grise* or *jaspée*. The latter was preferred to the former, but according to M. Boutron-Chalard without any just grounds. This preference, however, led to the employment of means for producing the desired appearance artificially. Black cochineal is left for thirty-six or forty-eight hours in a damp cellar. It is then put into a bag with finely powdered Venice talc. After shaking them together, the superfluous talc is removed by sifting, and the cochineal dried. Before the process was made known, attempts were made to produce the same appearance by sulphate of lime and by white lead, but without success.

There is a third kind of cochineal of inferior quality called *Cochenille sylvestre*, which is much smaller, and mixed with a substance having a cottony appearance. This species seems to live upon the *Cactus opuntia* also.

John † found in cochineal,—cochinelline, 50; gelatine, 10.5; waxy fat, 10; modified gelatinous mucus, 14; membranes, 14; phosphoric and muriatic alkaline salts, and phosphate of lime, iron, and ammonia, 1.5 = 100. MM. Pelletier and Caventou have greatly extended our knowledge of cochineal, which, according to them, consists of, 1*st*, carmine, a particular animal matter; 2*d*, a fatty substance, composed of stearine, elaine, and an odorous acid; 3*d*, salts, phosphate of lime, carbonate of lime, muriate of potass, phosphate of potass, and potass united to an organic acid.

COCHLEARIA ARMORACIA.—So far back as the year 1778 experiments were made on horse-radish, and the presence of sulphur in it was ascertained. ‡ It was settled that the sulphur was kept in a complete state of solution by the oily principle alone, and the horse-radish was found to contain a very heavy volatile oil, starch, and the sulphate and carbonate of lime. The two first papers, and, at the same time, the most important on this subject, were those of M. Guéret, formerly military apothecary at Strasbourg, and of Tingry. They are inserted among the Memoirs of the Societé Royal de Medecine for 1782 and 1783. §

Einhoff has discovered that the acrimony of horse-radish is owing to a volatile oil of a pale yellow colour, and which has the consistence of oil of cinnamon. The liquid obtained from the root of horse-radish by distillation gave traces of sulphur. The tincture of horse-radish, for however short a time it has been prepared, deposits crystals of sulphur. If these crystals, of a golden

* Journal de Pharmacie, T. vii. p. 526. 1821.

† Chemische Schriften, B. iv. p. 210. Berlin, 1813.

‡ M. Deyeux's Notes to la Chimie de la Garaye, par Parmentier, p. 295.

§ Analyse de quelques Plantes Cruciferes, par M. Tingry. Récherches et Experiences sur la Nature des Plantes Cruciferes, par M. Guérét.

yellow colour, are collected and exposed to flame, they exhale a *peculiar* sulphurous odour. The first discoverers of the presence of sulphur in plants have considered it as a sulphur *sui generis*. An infusion of horse-radish root made with distilled water reddens tournesol.—Ch. and R.

The cause of the pungent odour of cruciform plants early engaged the attention of chemists. Some thought that a principle so acrid and so volatile as that of the antiscorbutic plants could only be of an alkaline nature, while others, and particularly Cartheuser, considered it to be acid. At last Baumé * and Deyeux recognized sulphur as their odorous principle. A prize proposed for the best analysis of the cruciform plants was divided between MM. Tingry and Guérêt, and deservedly, for they are excellent examples of the earlier form of rational vegetable analysis, and contain many facts which have been advanced as discoveries by writers long after them. Besides other conclusions, M. Guérêt infers that the *Spiritus rector* of horse-radish is neither acid nor alkaline; that the sulphur, which it contains in a state of perfect solution, exists in it only by the intervention of the oily principle, and in consequence of its extreme state of division; that it has no connection with the smell of the root, which, in the cruciform as well as in other vegetables, is *sui generis*; and that the root contains a heavy essential oil, which even seems to retain a little sulphur. Black mustard seed was, in the present advanced state of vegetable chemistry, analyzed by M. Thibierge.† His experiments establish the emulsive nature of these seeds, as pointed out by M. Vogel, and that they also contain an acrid, warm, and heavy volatile oil, (with which there is combined a certain quantity of sulphur, either in simple solution or in a state of combination,) to which it seems to owe that causticity which renders it vesicating. Lastly, M. Planche ‡ has given a table of vegetables which he examined with a view of ascertaining the proportion of sulphur they contained. He found it in some rich in volatile oil, as carraway seeds, and in others absolutely without oil, as the herb of pellitory, and in bland as well as in acrid vegetables. It existed in large quantity in the flowers of *Sambucus Ebulus, Tilea Europœa,* and *Citrus Aurantium;* in the herbs of *Parietaria officinalis,* and *Mercurialis annua;* in the flowering stems of *Hyssopus officinalis, Artemisia Dracunculus,* and *Ruta officinalis;* in the seeds of *Anethum Fœniculum* and *graveolens, Carum Carui,* and *Pimpinella Anisum;* and in the buds of the *Eugenia carophyllata.* Sulphur was found in small quantity in the flowering stems of *Melissa officinalis, Rosmarinus officinalis, Marrubium album, Potentilla anserina, Portulaca oleracea, Borago officinalis,* and *Artemisia Absinthium;* in the leaves, flowers, and seeds of *Lactuca officinalis, Rosa pallida,* and *Pimpinella Anisum.* Traces of sulphur were detected in the stalks of *Plantago officinalis, Chelidonium ma-*

* Eléméns de Pharmacie, 3d edition, p. 452.
† Journal de Pharm. T. v. p. 439.
‡ Ibid. T. viii. p. 367.

jus, and *Agrimonia Eupatoria;* leaves and petals of *Lactuca sylvestris,* and *Papaver Rhœas;* seeds of the *Phellandrium aquaticum;* and flowering stems of *Scandix cerefolium,* and *Conium maculatum.* The following vegetables contained no sulphur: flowering stems of *Centaurea Cyanus, Chironia Centaurium, Matricaria Chamomilla, Solanum nigrum, Carduus benedictus, Artemisia officinalis,* and *Euphrasia officinalis;* flowers of *Tussilago Farfara, Lilium album,* and *Anthemis nobilis;* bark of *Laurus Cinnamomum;* fruit of the *Rubus Idæus, Fragaria vesca, Myrtus Pimento, Juniperus communis, Myristica moschata,* and *Mace.*—(A. D.)

Colchicum Autumnale.—Störck, who is here mentioned, and who made much use of meadow saffron, collected it in the beginning of summer, and infused it while fresh. Colchicum wine has been successfully employed in the cure of tape-worm by Robert Chisholm, M. D. * The various preparations of colchicum are described by Dr Balber of Zurich. † Colchicum is very common in Mingrelia, formerly called the Colchide. It ornaments the meadows, but its form is deceitful, for it has a naseous smell. It is poisonous to all animals. The horse alone eats it with impunity, whilst all cattle avoid it.—Ch. and R.

In Dr Chisholm's case, the *Vinum colchici,* made according to Dr Marcet's receipt, succeeded in a case of tape-worm after turpentine had failed. The patient took a tea-spoonful two or three times a-day.

The formulæ published by Dr Balber are those of various British practitioners, and well known in this country.

According to the analysis of Pelletier and Caventou,‡ meadow saffron contains, 1. a greasy matter, formed of stearine, elain, and a peculiar volatile acid; 2. a new alcaloid principle called *Veratria,* because it exists in greater abundance in *Veratrum album* and *Sabadilla;* 3. a yellow colouring matter; 4. gum; 5. starch; 6. inulin in abundance; 7. lignine.—(A. D.)

Colombo.—It is to be regretted that the author has not mentioned his authority for enumerating the cinchonine among the principles of colombo. We do not know an analysis of this root in which this product is mentioned.

M. Planche has written a very able essay on *Colombo, Cocculus palmatus,* De Candolle. § Commerson thinks that it belongs to the *Menispermum hirsutum.* Willdenow regards it as a kind of bryony; but if it has some resemblance with bryony in the disposition of the layers, the texture of the epidermis, and the bitter taste, it differs from it in colour. According to M. Guibourt, the true colombo root is no longer found in commerce. There is sold in its stead a spurious colombo, which is brought from the states

* London Medical Repository, March 1824.
† Journal de Pharm. T. xi. p. 409.
‡ Annales de Chimie et de Physique, Vol. xiv. p. 82.
§ Bulletin de Pharm. July 1811.

of Barbary. This last is easily known by its not containing starch; (iodine does not alter its colour;) by its turning black with sulphate of iron; disengaging ammonia by the action of caustic potass; and by its infusion reddening tournesol paper:—all of which circumstances are foreign to the true colombo.—Ch. and R.

The authority, upon which I enumerated cinchonine among the principles of colombo root, was to me the most satisfactory,—my own. After my discovery of a peculiar principle in cinchona bark, to which I gave the name of cinchonine, I tried a variety of other drugs, to ascertain how widely it was diffused through the vegetable kingdom; and as at that time I considered that cinchonine alone possessed the properties of being soluble in alcohol, and of forming a precipitate with infusion of galls, I inferred that every substance possessing these properties contained cinchonine. It has, however, since been discovered, that these characters belong to several principles specifically distinct. They must now, therefore, be considered as only characterizing a class or order of principles; and it remains to be ascertained whether colombo contains the species now described under the name of cinchonine, or whether it owes its bitterness and active properties to another species of the family. In the last edition of the Dispensatory, I have suggested that it is probably allied to Picrotoxia, which is the active principle of another species of *Menispermum*.

The spurious colombo brought from Barbary is probably confined to the south of Europe; but the root of an American plant, *Frasera Walteri* of Michaux, *Swartia Fraseri* of Smith, is imported into Liverpool, and dispersed over the north of Europe as the true colombo root. Professor Bigelow, whose pharmacological works* have contributed much to the advancement of the science, has briefly stated, that it may be distinguished from the true colombo "by its whiter colour, lighter texture, the admixture of longitudinal pieces, and especially by its taste, which is sweetish at first, and not more than half as bitter as the real colombo." †

M. Stolze of Halle has much more minutely pointed out the distinctions, both physical and chemical, of these two roots. The tincture of the genuine root was not affected by a solution of protosulphate or permuriate of iron, but afforded a copious dirty grey precipitate with tincture of galls; while, on the contrary, the tincture of the spurious root acquired a dark green from protosulphate and permuriate of iron, and gave no precipitate with tincture of galls.‡—(A. D.)

Convolvulus Jalapa.—The author says in one place, that the resin of jalap is rarely purgative; and two lines lower, that it purges abundantly if it be triturated with sugar and almonds; hence it would appear, that the addition of these substances is a

* American Medical Botany, 3 vols. 8vo, with lx. coloured plates. Boston, 1817–20.

† A Treatise on the Materia Medica; intended as a sequel to the Pharmacopœia of the United States. 8vo. Boston, 1822. See p. 141.

‡ Berlinisches Jahrbuch für die Pharmacie, 1820, p. 481.

necessary condition for the purgative action of the resin. This assertion, given with more or less obscurity, is found in the works which seem to have served as the model or type of the Dispensatory. The fact is, that the resin of jalap in the dose of four, six, or eight grains, purges in a very sensible manner; and that, if it be combined with sugar or emulsions, it is not to develope or augment its purgative property, but that it may not affect too sensibly the tissues which compose the gastro-intestinal surface with which it comes in contact.

M. Martius, by the aid of animal charcoal, deprived of colour the resin of jalap dissolved in alcohol. This resin thus purified was soluble in rectified oil of turpentine, acetic acid, ether, and in the fixed alkalies; ammonia dissolved it slightly at a boiling heat. * Mr Hume Junior has indicated in jalap a white pulverulent substance under the name of *Jalapine*. † It is obtained by treating jalap by acetic acid. After having filtered the acid solution, it is precipitated by ammonia, and the jalapine is obtained by filtration. M. Chevallier presented some of it to the Section of Pharmacy.—Ch. and R.

I readily confess, that what I have said of the action of the resin of jalap is borrowed from preceding authors, as I have never employed it myself, nor even known it to be prescribed in this country. The inconsistency in the text of the Dispensatory is not, however, so great as my translators represent it. For it is plainly to be inferred, that the reason why the pure resin does not prove cathartic is its too great acrimony; and that the addition of sugar or of emulsion acts by mitigating or enveloping its acrimony, which is exactly the opinion of the translators.

Cadet ‡ found that jalap-resin was not, as commonly believed, perfectly insoluble in ether. By means of this menstruum he analyzed it into two substances; seven parts of hard resin insoluble in ether, and three of soft resin soluble in ether. The latter, on evaporation of the ether, remained as a soft, dark brown, somewhat diaphanous, greasy substance, very difficultly dried, and gave out on being heated an acrid, suffocating, bituminous smell, which was not the case with the hard resin. Planche § observed that the resin extracted from the wood was nearly white, and surpassed in activity that got from the bark, which contained also a peculiar brown colouring matter. Göbel || found jalap-resin to contain more oxygen than any other resin Its elements were, carbon, 36.62; hydrogen, 9.47; and oxygen, 53.91 = 100.—(A. D.)

COPAIFERA OFFICINALIS.—As a remedy for leucorrhœa, a con-

* Letter of M. Vanmons to M. Planche, Journal de Pharmacie for 1826, T. xii. p. 141.

† London Medical and Physical Journal, April 1824. See p. 346.

‡ Journal de Pharmacie, 1817, T. iii. p. 495.

§ Bulletin de Pharmacie, T. vi. p. 26.

|| Buchner's Repertorium, B. xi. p. 83.

serve is made of equal parts of balsam of copaivi and of sugar. To 32 grammes of this mixture 18 decigrammes of powdered saffron are added; * this conserve succeeds also in chronic gonorrhœa. The Brasilian mixture perhaps does not differ essentially from this, although, according to the formula published by its contriver (M. Lepère) in the Gazette de Santé of 5th February 1825, † it contains balsam of Mecca of the consistence of manna, *hic labor*, without any sugar. The balsam of copaivi has been analyzed by M. Boullay. ‡ MM. Planche, § Ancelin, ‖ and Blondeaux, ¶ have investigated the adulteration of the balsam of copaivi ** by castor oil. Sulphuric acid appears to be the best reagent for the discovery of this fraud. On mixing three parts of balsam of copaivi, and one part of sulphuric acid, they form a plastic and reddish mass; but castor oil with sulphuric acid only becomes of the consistence of turpentine, and is not coloured. When copaivi balsam is mixed with carbonate of magnesia, the latter is entirely dissolved, and the mixture becomes transparent if the balsam is pure; on the contrary, it becomes more opaque the more the balsam is adulterated. The proof by sulphuric acid was discovered by M. Planche, and that by carbonate of magnesia by M. Blondeaux.

On analysis, balsam of copaivi furnishes a fourth, and even a third part of volatile oil. This oil assumes a blue colour when the distillation has been made on an alkali. It is said that some oils may be adulterated with it. 124 grammes of balsam of copaivi furnished 96 grammes of oil.

It is not very certain, as is said in the Dispensatory, that the balsam of copaivi is a combination of resin and volatile oil. It is more probable that the balsam is decomposed in its distillation with water, and that two new bodies are formed. ††

The saponification of balsam of copaivi is also of some interest. M. Godefroi has made some trials with this view. The proportions which succeeded best with him were two parts of balsam with one part of soap-boiler's lees. The mixture, shaken in an earthenware vessel, became of a milky white, which speedily grew thick, and at the end of two hours became solid. M. Chereau made a mixture of balsam and lie at 37° in the proportions above

* Barbier, Matière Med. February 1822. In this reference there is some mistake. A. D.

† See also the observations on this mixture by M. Godefroi, Journal de Pharmacie, Vol. xi. p. 291.

‡ Bulletin de Pharmacie, Vol. i. p. 286.

§ Journal de Pharmacie, T. xi. p. 228.

‖ Ibid. T. xii. p. 95.

¶ Journal de Chimie Medicale, T. i. p. 560.

** Buchholz remarks, that when the balsam of copaivi does not dissolve in a mixture of four parts of alcohol and one of ether it is spurious. Journ. de Pharm. T. i. p. 210.

†† Schomberg, Gehlen's Journ. Bd. vi. 494.

stated, but did not obtain a perfect soap. Having added one part of the lie, he observed the saponification was formed very slowly when cold. The mixture was placed on a very slow fire, and the mass then hardened, and was saponified. The soap thus obtained preserved its smell, and dissolved easily in cold water, and no traces of the balsam were observed to separate. But M. Godefroi had before recognized the easy solubility in water of the soaps of copaivi, and he ascertained that they preserved the smell of balsam of copaivi. M. Chereau doubts if soap of this kind be durable. Those which he prepared constantly attracted moisture from the atmosphere.—Ch. and R.

M. Lepère, as many charlatans before him have done, has evidently given in a deceptive specification* of his nostrum, probably with the intention of its obtaining greater notoriety. But it is to be hoped that good will result from the experiments which it has led some of the Parisian pharmaceutists to make on the subject.

Hayne† has given a very full account of the species of *Copaifera* yielding the balsam. The first notice of copaivi balsam and the tree which yields it was given by Marcgrav and Piso‡ in 1648. Jacquin§ observed another species in Martinique in 1763, which he called *officinalis;* but as the denomination is not now suitable, it has been named after its discoverer. Desfontaines in 1821 || made known two other species, *C. Guaianensis* and *Langsdorffi.* Martius in 1823¶ described the *C. coriacea.* *Lastly,* Hayne has added various other species from the examination of specimens brought by Sellow from Brasil, and one communicated by Beyrich, —*C. Beyrichii, C. Martii, C. bijuga, C. nitida, C. laxa, C. cordifolia, C. Sellowii, C. oblongifolia.* Hayne is of opinion that the *C. bijuga* is the species observed by Piso and Marcgrav, and that the balsam is now collected from all the species which are known to the natives of the province where they grow; but the greatest quantity is furnished by the *C. multijuga,* in the province of Para. The smaller species which grow in the interior of Brasil, as in Bahia and Minas, yield less balsam, but it is more resinous and sharper. As, according to the best accounts, balsam is brought into the market from most, if not all the species, it may be easily

* *Liquid Brasilian Mixture.*

Take of commercial balsam of Mecca of the consistence of manna, 120 parts; very pure balsam of copaivi, 360 parts; pillular extract of saffron, 1 part. Mix according to art.

Brasilian Mixture in Paste.

Take of liquid Brasilian mixture, 112 parts; balsam of Mecca of the consistence of honey, 226 parts. Mix according to art.

† Getreue Darstellung und Beschreibung der in der Arzneikunde gebräuchliche Gewächse, Bd. x p. 12–23.

‡ Hist. Rer. Nat. Bras. p. 18.

§ Select. Stirp. Americ. Hist. p. 133, t. lxxxvi.

|| Mém. du Mus. T. vii. p. 376.

¶ Martius and Spix, Travels in Brasil, 2 vols. 8vo. London, 1824. See Vol. ii. p. 99.

conceived, according to this accurate author, that this balsam, without being adulterated, may present great varieties in colour, consistence, smell, and taste.

In commerce two kinds are usually distinguished, and named from the country in which they are produced, the Brasilian and West Indian. The Brasilian was formerly thought to be obtained only from Guaiana and the Island Maranhon. It is thin, clear, of a pale colour, pleasant aromatic smell, and of an acrid, bitter taste; while that procured from the Antilles is thick, golden yellow, not transparent, and of a less agreeable smell, even like turpentine. It is probably the product of the *C. Jacquinii*, the only species which grows in Martinique and Trinidad.—(A. D.)

Crocus sativus.—We are indebted for an analysis of saffron to MM. Bouillon, Lagrange, and Vogel. * They regard the colouring matter as a particular principle, and have given to it the name of *Polychroite*, because of the variety of tints which can be obtained from its solution. For instance, from the rich yellow that it is at first, it can be made, by adding to it some drops of nitric or sulphuric acids, or by sulphate of iron, to pass through all the tints of green and blue. It is also rendered colourless by the solar rays, and by chlorine.

M. Henry, head of the Central Pharmacy, has recently published † some observations on the colouring matter of saffron. The polychroite, according to his researches, is a combination of this colouring matter and of volatile oil. The colouring matter exists in saffron in the proportion of 42 per cent. and the volatile oil in that of 10 per cent. According to the same professor it is to the volatile oil, rather than to the colouring matter, that the properties of saffron ought to be attributed. 32 grammes of saffron, perfectly dry, afforded 3 grammes of oil.

An inclosure in which saffron is cultivated is called *saffranière*. The first year an acre yields at most two kilogrammes of dry saffron; but the second and third years it yields as much as ten. Saffron appears at the end of October, when the air is moderately hot, with mild showers. The saffron flowers appear in abundance, and mantle the fields with a flax-gray covering. The excellence of the saffron depends upon the manner in which it is dried. Five pounds of fresh saffron are required to yield one pound of dry.

The plant which yields saffron grows spontaneously on Mount Caucasus, the lower part of Mount Olympus, and in the mountains and valleys between Old Crimea and Jambol. Thus its native soil is not unknown, notwithstanding the contrary opinion of the Millers and Alston. Linnæus makes it indigenous in Switzerland; but Haller accuses Linnæus of having confounded the officinal variety with that which flowers in spring; and if we must

* Annales de Chimie, Vol. lxxx. p. 168. † Journal de Pharmacie, T. vii. p. 397.

decide for one or the other of these celebrated botanists, it is on Haller that we should rely for Helvetic plants. The officinal variety has much larger flowers than the vernal crocus; its stigma, divided into three segments, is plumper and stronger scented. The Crimean saffron is smaller and less bitter. *—Ch. and R.

Croton Cascarilla.—Cascarilla grows also in San Domingo, in dry and stony places about the *Port de la Paix*, from whence it is called *Sauge du Port de Paix*. This croton rises nearly to the height of the rosemary of our country. Its branches are brittle, and furnished with very entire leaves, nearly of the form and size of those of the almond tree. Their upper surface is studded with small orbicular scales; the under is whitish, shining, and silvery.—Ch. and R.

The bark, which has been occasionally called *Elutheria*, is identical with cascarilla. Europe is supplied with it exclusively from the Bahama Islands,† although the tree is found also in Jamaica.‡ It is the *Clutia eluteria* of Linnæus, the *Croton eluteria* of Swartz § and subsequent authors. This is called by Browne || sea-side balsam; is larger than the congenerous species, and grows frequently, according to him, to the height of four or five feet. By Dr Wright it is said to rise to about twenty feet. The plant referred to by the translators is the *Croton cascarilla* of Willdenow, *Croton humile* of Linnæus and Lunan, ¶ small sea-side balsam of Browne, who describes it as very hot and pungent upon the palate; but Descourtilz ** says that the negro doctors of Port de Paix, where it forms entire thickets, consider the cascarilla (that is, the bark of the shrub) as a panacea. He describes it as having an acrid bitter taste, and a very agreeable aromatic smell. The *Croton lineare* of Lunan and Jacquin, †† the *Clutia cascarilla* of Linnæus, ‡‡ the wild rosemary of Jamaica, is made by Sprengel a distinct species, but by Willdenow only a variety of the preceding. Of the wild rosemary, however, Dr Wright says that the bark has none of the sensible qualities of cascarilla.—(A. D.)

Cucumis Colocynthis, *Colocinth.*—In this article no reference is made to the treatises of MM. Vauquelin and Orfila on this peponide. Vauquelin found in the colocinth a resinous substance. This, when exposed to heat, emits a white smoke, whose

* Murray, Apparatus Medicaminum, Vol. v. p. 221.

† Schoepf. Reise durch einige der vereinigten Nordamericanischen Staaten nach ost Florida und den Bahama Inseln.

‡ An Account of the Medicinal Plants growing in Jamaica, by William Wright, M. D. See London Medical Journal, Vol. viii. for 1787, p. 249.

§ Prodromus descriptionum vegetabilium quæ sub itinere in Indiam Occidentalem, annis 1783–87, digessit. 8vo. Holmiæ, 1788.

|| The Civil and Natural History of Jamaica. Folio. London, 1756.

¶ Hortus Jamaicensis. 2 vols. 4to. Jamaica, 1814. See p. 290, Vol. ii.

** Flore Medicale des Antilles, T. i. 8vo. Paris, 1821. See p. 11.

†† Select. Stirp. Americ. Historia. Folio. Vinobonæ, 1763. See p. 256, tab. 162, f. 4.

‡‡ Amœnit. Acad. T. v. p. 411.

taste is not bitter, and which leaves a light and voluminous charcoal like that of resins. M. Vauquelin has given to it the name of *Colocintine* or *Colocintin*, since there was no evidence of alkaline properties

It is in the colocintine that the repugnant bitterness of the colocinth resides. It is soluble in large proportion in alcohol, less soluble in water. It is precipitated white by the infusion of nutgalls, and the combination formed is little soluble. *

M. Orfila has shown, that in the dose of four grains † colocinth acts with great energy; that it makes an impression as quick as intense on the intestinal tube; that it is capable of occasioning inflammation of the tissues; and that it is only with extreme circumspection that it can be used. ‡

Burckhardt, in his travels across Nubia (4to, London, 1819), found the country covered with colocinth, so common is this plant in all parts of that desart.—Ch. and R.

DIGITALIS PURPUREA.—Boerhaave has ranked this plant among the poisons. § The Italians say of the digitalis that it is an universal remedy, *aralda tutte le piagghe salda.* M. Royer thinks that he has discovered the active principle of digitalis, Digitaline. ‖ The *Digitalis ambigua* and *lutea* are acrid, poisonous, and regarded as most powerful diuretics, *(Elenco delle piante* (Balbis) *Torino.)* We should choose the leaves of plants which grow spontaneously in elevated places exposed to the sun, gather them before their inflorescence, and use them newly dried. ¶

It is curious and instructive to revert to the opinions of our predecessors, in regard to those drugs whose activity and mode of operation are now better understood.

Boerhaave's words in regard to foxglove are: "Habent talem acrimoniam, ut os, fauces, œsophagum, et ventriculum exulcerent; insontes fructus ejus edentes incidunt in vomitum et dysenterias vix curabiles." **

Haller, in like manner, considers it as poisonous:†† "Amara planta. Decocti cochlearia sex, septem, ‡‡ vomitum, §§ alvumque movent non sine veneno." ‖‖

* Journal de Pharmacie, Vol. x. p. 416.

† This is a mistake. Orfila says *one or two drachms.*—(A. D.)

‡ Orfila, Cours de Medecine Legale. 8vo. Paris, 1821. See p. 167.

§ An Experimental History of the Materia Medica. By William Lewis. 4to. London, 1768, p. 253.

‖ Du principe actif contenu dans la Digitale Pourprée. Mémoire lu à la Société de Physique et d'Hist. Nat. de Geneve. See Bibliotheque Universelle, Tome xxvi. Sciences et Arts, p. 102. Juin 1824.

¶ Schwilgue, Mat. Med. ii. 364.

** Historia Plantarum quæ in horto academico Lugduni-Batavorum crescunt. Lugd. Bat. p. 308.

†† Historia Stirpium indigenarum Helvetiæ, T. i. p. 143. Folio. Bernæ, 1768.

‡‡ On aërial influences, pp. 49, 50; cum nausea.

§§ Buchwald, p. 102. Dodon. Lobel. Pechey, Herbal, p. 105. Rai.

‖‖ Hist. de l'Acad. ann. 1748, p. 84. Boerhaave.

Many modern chemists have attempted to isolate the narcotic principle of foxglove, and a condensed account of their observations has been published by A. Richard in the Dictionary of Drugs, already mentioned with much approbation. Le Royer extracted the dried leaves by ether, cold and warm. The extract was acted upon by distilled water, which left chlorophylle undissolved. The solution reddened tournesol paper, was treated with lead, evaporated to dryness, and again treated with ether and evaporated. The product was called *Digitaline.* It was brown, pitchy, fully restored the colour of tournesol paper reddened with an acid, was deliquescent and uncrystallizable. M. Pauguy,* by boiling the dried leaves with water acidulated with sulphuric acid, and afterwards with calcined magnesia, obtained a principle, to which he has given the same name, although evidently of a very different nature. It was white, inodorous, of an acrid taste, crystallized in fine needles insoluble in water, soluble in alcohol and ether, and alkaline. Richard, however, properly remarks, that of late chemists have had too great a desire to find alkaline principles in vegetable simples, and to overlook other principles in which their virtues may equally reside, and he is of opinion that the digitaline of M. Le Royer may be composed of various principles, all soluble in ether.—(A. D.)

Datura stramonium.—See the result of experiments made by M. Barbier. † He employed the *Datura Tatula,* which is found in some gardens.—Ch. and R.

As M. Barbier's clinical observations are in the second edition only of his work, and may not be accessible to all the readers of the Dispensatory, an abstract of them should be acceptable. An old soldier, with pain in the right shoulder, and permanent contraction of the arm, and with transient pains in the right thigh and leg, was treated with the powder of stramonium leaves, (D. Tatula.) 1st day, Twelve grains in two doses; no effect.—2d day, A scruple; colic pains; frequent stools; dryness of the mouth and fauces; fear of inability to swallow; pain in the temples; opening of the eyelids contracted; pupils dilated; vision disturbed, cloudy; no sleep; agitation; pain in the head and right arm.—3d day, Same dose; colic; appetite; slight headach; pain in the temples; micturition easy; bad night, with agitation.—4th day, Half a drachm; in the morning troubled, and extremely weak vision; at mid-day left eye natural, but right eye blind, and all the right side more affected.—5th day, Same dose; colic, with stools; difficulty in making water; no headach or oppression; no determination to the head; face rather pale; right eye still affected.—6th day, Same dose; sleep disturbed; great headach during the night; weight of head after mid-day; urine scanty, and voided with difficulty; dryness of the mouth continues; appetite; singular expression of countenance; eyes seem smaller.—7th day, Medicine discontinued; vision of right eye still disturbed.—8th day, Patient cheerful; the

* These sur la Digitale pourprée, par D. Nicolle. Paris, 1824.
† Traité de Matière Medicale. Second edition. Paris, 1824. Vol. iii. p. 415.

effects of the stramonium having speedily gone off. Took in all 158 grains in six days.

A man with neuralgia of the right side of the face got nine grains of stramonium powder daily in pills, in divided doses, morning, mid-day, evening. In the evening great dryness of the mouth and throat; pupils dilated; apparent dryness of the surface of the eye; no dejection; good night.—2d day, Twelve grains; dryness of the mouth; constant thirst; slight colic pains; appetite; eyes dryer and irritated; agitated night; no sleep; pulse commonly quick; neuralgic pains during the day only.—3d day, Eighteen grains; great dryness of mouth; thirst; cholic; three stools; micturition slow; gusts (*bouffées*) of heat towards the head produce threatenings of syncope; pain in the left side of the head; no cephalic congestion.—4th day, Twenty-four grains; symptoms continue.—5th day, Twenty-four grains; cannot distinguish objects; conjunctiva red and irritated; singular expression; pain in the limbs; patient cannot keep himself up; no weight of head; calm sleep part of the night; good appetite.—6th day, Thirty grains; no weight of head, but great weakness of limbs; no depression; sleep agitated; eyes irritated; painful pricking over all the body during the night.—7th day, Thirty-six grains; takes the drug with pleasure; no neuralgic pains for some days past; effects increased.—8th day, Forty-five grains.—9th day, Forty-five grains; some oppression of head, which is heavy, especially when the rushings of heat to the head take place; muscular strength annihilated; good appetite; difficult micturition; sleep disturbed by dreams; transient blindness.—10th day, Medicine discontinued.—12th day, Feebleness of limbs continue, with dryness of mouth and throat.—13th day, Symptoms gone, except weakness of the limbs, which lasted some days longer; took in all 243 grains in nine days.

A man, affected with trembling of the limbs and fainting after great mental distress, and with occasional epileptic paroxysms, got stramonium for some time, beginning with six grains, gradually increased to fifteen, and with occasional omission of the remedy. When it was omitted his nights were calm, and he rested quietly in bed; but when it was given, the patient fell into a state of agitation, grew delirious, and got out of bed—thus by its effects discovering the presence of cephalic lesion. Some months afterwards he died, and the arachnoid and pia mater were found much thickened with very marked redness. On the whole, Barbier found the effects of stramonium to resemble those of belladonna.

According to Promnitz, the thorn apple contains, gummy extractive, 58; extractive, 6; chlorophylle, 64; albumen, 15; resin, 12; phosphate of lime and magnesia, 23 = 178. Brandes has found in it a new alkaloid, *Daturine*.—(A. D.)

Dryabalonops camphora.—"That the camphor brought to Europe from the Islands of Sumatra and Borneo is not the product of the *Laurus camphora*, was remarked by Kæmpfer; but no accurate description has yet been given of the tree which yields

it. Mr H. T. Colebrooke * has, however, lately been enabled to determine the genus to which it belongs, and to which we," says Dr A. T. Thomson, " have referred it, from the examination of some seeds in a very perfect state sent from Tapanooly to Calcutta." In the Linnæan system it belongs to Class xiii. Order 1, *Polyandria monogynia*, and in the natural system of Jussieu is in the family of *Guttiferæ*.

" The *Dryabalonops camphora* is a native of the forests on the north-western coast of Sumatra, and especially in the vicinity of Tapanooly. It is stated by Mr Prince to be found in abundance from the back of Ayer Bongey, as far north as Bacougan, a distance of 250 miles. It grows to a great height, and the trunk, which is arboreous, and covered with a brownish bark, often measures six or seven feet in diameter."

" The camphor forms in the heart of the tree, occupying portions of a foot or a foot and a-half long at certain distances ; but the younger trees yield oil only, which has nearly the same properties as the camphor, and would ultimately be converted into the concrete substance. The natives, in searching for the camphor, make a deep incision in the trunk, about fourteen or eighteen feet from the ground, with a billing or Malay axe ; and when it is discovered, they fell the tree, and cut it into junks of a fathom long, which are again split. The camphor is found in a concrete state, and resembles whitish flakes in perpendicular layers, occupying a space about the thickness of a man's arm. A middling sized tree will yield nearly eleven pounds, and a large tree double that quantity."—Ch. and R.

This note is translated from the London Dispensatory of Dr A. T. Thomson, whose words I have transcribed, as, from their ambiguity, the translators have been led into an error, and made Dr Thomson assert that he had confirmed the accuracy of Mr Colebrooke's description, which certainly is not his meaning. The seeds were examined by Mr Colebrooke only, and probably never were seen by Dr Thomson. An account of whatever was known concerning the camphor tree of Borneo, before the publication of Mr Colebrooke's paper, has been given by Dorrffurt † and Virey. ‡

Since that time some further information has been furnished by Mr John Crawford, § to whose liberality I have been indebted, besides other valuable products of the East, for specimens of the wood and fluid and solid camphor of this tree. As the descriptions of these substances hitherto given by authors are in several respects erroneous, I mean to take another opportunity of correcting them when

* Asiatic Researches, Vol. xii. p. 539.

† Abhandlung ueber den Kampher. 8vo. Wittenberg, 1798. See p. 13 ; and also Neues Deutcher Apothekerbuch. 8vo. Leipzig, 1801. See 1ster Th. p. 97.

‡ Journal de Pharmacie, T. vii. p. 143.

§ History of the Indian Archipelago, 3 Vols. 8vo. Edinburgh, 1820. See Vol. i. p. 515, and Vol. iii. p. 418.

I shall have finished my examination. In the meantime, I may state that the wood, though tolerably heavy, is porous, and almost as tubular as a dense cane. It has the colour of oak, and the inside of the tubes is shining as if varnished over. In my specimen there is no appearance of camphor, and the wood itself is tasteless. The fluid camphor is transparent, of a pale yellowish colour, smelling like a solution of camphor in oil of turpentine, and of a bitter turpentine taste. To the touch it is slightly viscid, and has not the harshness of oil of turpentine. Its specific gravity at 60° is 887. Exposed to the air on a watch-glass, it was reduced after standing a month to one-tenth of its original weight, became a clammy transparent homogeneous fluid of a very pale brown colour, and resembling in smell as well as consistence Canada balsam, but without any odour of camphor. This residuum seemed to be soluble in ether, and partially in cold alcohol, but on the application of heat was totally dissolved. Fluid camphor, when agitated with water, formed a whey-coloured mixture, which gradually separated into a transparent supernatant portion, and a milky inferior fluid, but not nearly so quickly as oil of turpentine and water separate. Its distillation with water is liable to the same difficulty as the distillation of oil of turpentine, from the explosions which blow over into the neck of the retort a part of the mixture; but in the receiver I got a watery fluid, with some oil, and a white opaque pellicle like camphor. The liquor in the retort gradually acquired a gelatinous appearance, and on standing was found to consist of a watery fluid, and abundant white curdy like substance, which floated in the fluid. The most minute description of the solid camphor of Borneo is given by Dörrffurt,* and Schwartze. † Both of these industrious compilers take their account from John Crawford of Demerary,—an authority I have not been able to trace. It is said to be stronger than laurel camphor, and more fixed; to be opaque, of a chalk-white colour, friable between the fingers, of a not unpleasant taste, first cooling and then heating, and emitting when refined a distinct violet smell; and that a small portion is soluble in water, and the rest consists of pure volatile oil. The specimen examined by me does not altogether coincide with this description. It occurs in tabular plates somewhat translucent. It is easily pulverizable without the addition of alcohol, and the powder does not agglutinate on standing, whereas that of laurel camphor does. It is evidently more compact than common camphor, and its specific gravity hardly exceeds that of water; some portions even sink. It does not at all sublime in the vessels in which it is kept. When boiled with water its smell is disseminated, and it wastes, and its other characters do not differ from those of common camphor. Dr Ainslie ‡ says that it is the most common variety in the bazars of India; but in this he is certainly mistaken; for Mr Crawford, the historian of the Indian Archipelago, as well as Mr Colebrooke, notice its rarity, and the great request it is in for

* Neues Deutcher Apothekerbuch, 1ster Th. p. 98.
† Pharmacologische Tabellen. Folio. Leipzig, 1819–1826. See 1ster Bd. p. 160.
‡ Materia Indica, Vol. i. p. 48.

the Chinese market, so that it is sold in China for seventy-eight times the price of common camphor. In fact, it is brought to India and Europe in small quantities only as specimens.—(A. D.)

EUGENIA CARYOPHYLLATA.—Cloves have been analyzed by Trommsdorff.* M. Lodibert† has extracted, by means of alcohol, from Molucca cloves, called English, a crystalline matter. According to M. Bonastre,‡ cloves grown in Barbadoes contain much of this substance, and cloves from Cayenne none at all. He also states, that the *caryophilline*, which is the name given to this crystalline matter, is a white, brilliant, and satiny substance, in globular and diverging crystals, without taste or smell, soluble in boiling alcohol and ether. M. Bonastre considers it as a subresin; 500 grammes of Molucca cloves yielded 15 grammes of this substance. M. Lodibert extracted from the same kind of cloves a fixed, green, and aromatic oil. M. Bonastre procured oxalic acid by the action of nitric acid on the volatile oil of cloves. He has also shown that this volatile oil, on being brought into contact with nitric acid, assumes a deep red; and it follows from this experiment, that the colouring of any alcaloid by this acid ought to be regarded only as an accessary character; but it has never been regarded as the only character.—Ch. and R.

EUPHORBIA OFFICINARUM.—The analysis of Euphorbium by

	MM. Pelletier,	Braconnot.
Resin, - -	60.80	37.0
Wax, - -	14.40	19.0
Malate of lime, -	12.20	20.5
Woody matter, -	1.80	2.0
Do. and bassorine, -	2.00	13.5
Water and volatile oil,	8.00	5.0
Loss, - -	0.80	3.0
	100.00	100.0—Ch. and R.

For a still more minute analysis, I may refer to that of Brandes, § of which an abstract is given in the last (eleventh) edition of the Dispensatory.—(A. D.)

FERULA ASSAFŒTIDA.—The analysis of assafœtida by M. Pelletier: || Resin, 65.00; gum, 19.44; bassorine, a gum similar to that of Bassora, 11.65; volatile oil, 3.60; supermalate of lime, some traces; loss, 0.30 = 100.—Ch. and R.

Again I must refer to the eleventh edition of the Dispensatory for the

* Journal der Pharmacie, Bd. xxiii. 2. S. 23; also Journal de Pharmacie, T. i. p. 304.
† Ibid. T. xi. p. 101.
‡ Ibid. T. xi. p. 103.
§ Buchner's Repertorium, Bd. vi. S. 145.
|| Bulletin de Pharmacie, T. ii. p. 556.

more complete analysis by Brandes. * It was also examined by Trommsdorff. †—(A. D.)

Gallæ.—Tannin is only an ideal principle. None of the processes hitherto employed has furnished pure tannin. What is obtained is a compound of several bodies.—Ch. and R.

Galla.—Ellagic or tannic acid is a weak acid pointed out by M. Chevreul in 1815, ‡ and examined by Bracconnot in 1818. §

M. Bracconnot, when experimenting on nut-galls, with the view of preparing pure gallic acid by an improvement of the process of Scheele, found that the acid substance deposited from the infusion after undergoing fermentation was not totally soluble in boiling water. It is this residuum which he considers as a new acid, because it neutralizes alkaline substances, but it scarcely reddens tournesol paper, and is not sensibly soluble in boiling water. By the action of heat it is partly decomposed, and partly rises in acicular crystals of a fine greenish yellow, insipid, insoluble in boiling water, alcohol, ether; readily soluble in alkaline solutions, and precipitated unchanged from them by acids. M. Chevreul refers to the word *Tannin* in the sixth volume of the Dictionary of Chemistry and Metallurgy, in the *Encyclopedie Methodique,* in proof of his having previously discovered this substance.—(A. D.)

Gelatina.—The extraction of gelatine from bones by means of weak acids should not be omitted. The bones are digested for several days in weak muriatic acid, which is to be renewed if necessary. They are finally washed in water slightly alkalized, to remove the last portion of acid. The bones are then plunged into boiling water to extract the animal matter, which is converted into gelatine by the known processes.—Ch. and R.

The extraction of gelatine from bones has attracted much attention in various parts of the Continent, in consequence of the experiments and recommendation of Proust, and especially of Cadet de Vaux; and many exaggerated statements of the process have been published which have not stood the test of experience. ||—(A. D.)

Gentiana lutea.—In December 1820, MM. Henry Senior and Caventou read before the Medical Society at Paris a joint memoir on gentian root. It results from their labours, first undertaken separately, and afterwards together, that gentian contains, 1st, an odorous principle, very fleeting; 2d, a yellow bitter principle, to which they have given the name of *gentianine;* 3d, a matter the same as bird-lime; 4th, an oily matter, greenish, fixed; 5th, a free organic acid; 6th, uncrystallizable sugar; 7th,

* Buchner's Repertorium, Bd. vii. S. i.
† Journal der Pharmacie, Bd. i. p. 137.
‡ Annales de Chimie et Physique, T. ix. p. 329.
§ Ibid. T. ix. p. 187.
|| Journal of the Royal Institution, Vol. ii. p. 18–25.

gum; 8th, a tawny colouring matter; 9th, wood. * Bracconnot found in it a salt with base of potass. †

Gentian has its campanulated flowers verticillated round the stalk. This is one of its characters. This root forms the base of the cordial powder of farriers.

Besides the common gentian there are the croissette, *Gentiana cruciata*, and the gentianelle, *Gentiana amarilla*, which may be used.—Ch. and R.

Helleborus niger.—Hellebore contains, according to MM. Feneulle and Capron, traces of volatile oil, wax, a kind of resin, combined with a volatile acrid principle, in which resides the efficacy of the root, a bitter principle, gum, &c. White hellebore is the *Veratrum album;* black hellebore is also found in Lorrain. It is a powerful sternutatory; and it is on account of this property of unloading the brain that the ancients used it for curing madness. In veterinary medicine it is employed in the treatment of farcy.—Ch. and R.

Hirudo medicinalis.—M. Pallas ‡ has published the means for preserving leeches, and more recently the measures to be taken for making use of those which have already been employed. The history of these annelides has been much investigated of late. Very little now remains to be done. In proof of this it is sufficient to consult the monography of the genus *Hirudo*, by Carena; § —the treatises by Vitet || and Dr Johnson; ¶—Note on an annelide of a new genus, by Dutrochet; **—the paper of M. Virey, entitled *Complement de l'Anatomie de la Sangsue Officinale, et de ses Organes Sexuales*; ††—the account of the officinal leech, and its reproduction in the Antilles; ‡‡—the paper by MM. Pelletier and Huzzard Junior; §§—the report upon a paper by M. Desaux on the reproduction of leeches; ||||—the paper on the disposition and developement of the eggs of several species of oviparous animals belonging to the genus *Hirudo*, by M. Rayer; ¶¶—the work of Bergman, in which this celebrated chemist has described the most curious phenomena of the leech and its eggs;—***

* Journal de Pharmacie, T. vii. p. 173.
† Journal de Physique, Vol. lxxxiv. p. 245.
‡ Journal Universel des Sciences Medicales.
§ Memoire della Reale Acadamia delle Scienze di Torino, Vol. xxv. 1820.
|| Traite de la Sangsue Medicinale. Paris, 1809.
¶ A Treatise on the Medicinal Leech. London, 1816.
** Bulletin de la Societé Philomatique, 1817.
†† Journal de Pharmacie, May 1825.
‡‡ Ibid, June 1825.
§§ Ibid, March 1825.
|||| Ibid. for 1826, p. 14.
¶¶ Ibid. T. x. p. 593.
*** Opuscula Physica et Chemica, in 8vo. Lipsiæ, 1788, Vol. v. Dissertatio de cocco aquatico, sive hirudine octoculata. Dissertatio de Hirudinibus, ibid.

and lastly, the work by M. Derheims, apothecary at St Omers. * —Ch. and R.

To this long list of observations on the medicinal leech, considerable additions might be easily made, in consequence of the enormous consumption of them by practitioners of the school of Brousset, and the consequent importance of the animal as a therapeutical agent. M. Achard has given a short notice on the reproduction of the leech in the Antilles. †—M. Noble has written on the preservation and reproduction of leeches. ‡—Hafner on the preservation of leeches.§—Zier on their collection.‖—Thomas generally.¶—Dr Rees Price.** Dr Rude. ††—Hartmann. ‡‡—(A. D.)

Hyoscyamus niger.—M. Planche obtained from dried henbane an extract of a fine green colour, and retaining very well the poisonous smell of that plant. His preparation consists in macerating one part of henbane for four days in a temperature of 20° R. with four parts of alcohol at 22° Baume, filtering the tincture, distilling it to three-fourths, and evaporating the remainder in the water or vapour-bath. §§—Ch. and R.

Ipecacuan.—Notwithstanding all the information obtained on this root, and the extent of the article in the Dispensatory, the observations of M. Guibourt, in his abridged history of simple drugs, may be read with great advantage.

The following is an extract from a memoir of M. Lemaire-Lisancourt, which will be inserted in the next volume of the Memoirs of the Royal Academy of Medicine. This learned apothecary has shown that the word *Ipecacuanha* is Brasilian, and was first applied by Piso to two roots directly emetic, but differing in family, form, and properties. The term afterwards became general, and was applied in all parts of the world to a great number of emetic roots, whatever might be their forms and their natural families. The *Euphorbiaceæ*, the genus *Viola*, the genus *Ionidinium*, the *Rubiaceæ*, and, above all, the genus *Cephaëlis*, furnish the greatest number of plants called ipecacuan. Among the ionidiums M. Lemaire-Lisancourt distinguishes three principal species. The first is the *Ionidium ipecacuanha*, or *Viola*

* Histoire Naturelle et Medicale des Sangsues. Paris, 1825.
† Journal de Pharmacie, T. xi. p. 296.
‡ Journal Universelle des Sciences Medicales, T. xxx. p. 120.
§ Buchner's Repertorium, Bd. xv. p. 119.
‖ Ibid. Bd. xvii. p. 1.
¶ Histoire Naturelle des Sangsues. 8vo. Paris, 1806.
** A Treatise on the Utility of Sanguisuction or Leech-bleeding, with an Appendix, delineating the characteristic distinctions of the true Medicinal Leech. 12mo. London, 1822.
†† Buchner's Repert. Bd. xxi. p. 163.
‡‡ Ibid. Bd. x. p. 176.
§§ Archives Generales de Medecine, March 1823, p. 297, and following.

ipecacuanha of Linnæus, which M. Auguste Saint-Hilaire has gathered recently in the same places where it was found by Piso, who designated it under the name of *Ipecacuanha blanca.** The second kind comes from the *Ionidium calceolaria*, and is an inhabitant of the Antilles, Guiana, and especially Cayenne. It is called the *Ipecacuanha blanc de Cayenne.* The third is a new species, found in Brazil by M. Auguste Saint-Hilaire, and called by him *Ionidium indecorum.*

The genus *Cephaëlis* furnishes the greatest number of emetic species. Such are the *Cephaëlis muscosa*, called *Ouabouboue* by the Indians of Surinam; the *Cephaëlis asthmatica*, or *Azier à l'asthme;* the *Cephaëlis punicea*, the roots of which much resemble those of the *Cephaëlis ipecacuanha.*

It is the roots of this last species which alone constitute the ringed ipecacuan of commerce, the officinal ipecacuan in France. The roots of the ringed ipecacuan of different colours are got from the same species, having its vegetation modified by climate, water, and situation.

The *Boerhaavia hirsuta* on the coast of Guinea, and the *Pisonia fragrans*, in the Archipelago, are emetics, and called in the Antilles ipecacuanha. The same is the case in Malabar, Coromandel, and in the peninsula of India, in regard to the roots of the *Periploca ciliata.* The *Cynanchum lævigatum* produces the white ipecacuan of Bengal; the *Cynanchum tomentosum* the white ipecacuan of Ceylon; the *Polygala glandulosa* forms that which in collections is called the black ipecacuan of China; the *Spermacoce hexandra* is the black ipecacuan of Ceylon; the *Psychotria emetica* and the *Psychotria crocea*, the one a brownish gray, the other reddish, which are scarcely emetic, form the striated ipecacuan of commerce; the gray undulated ipecacuan of the Brazils comes from the *Spermacoce hexandra.* In this short monography must not be omitted the *Psychotria cordifolia*, which M. Leschenhaut has brought from Ceylon; a plant which has all the appearance of the common *Viola*, except that the leaves are sharper and cordiform, and that the roots are more emetic.—Ch. and R.

Martius, who along with Spix lately travelled through Brazil to increase our knowledge of its natural history, besides some splendid works, has published an account of the emetic vegetables which grow in that country. † He refers to Lemaire-Lisancourt's enumeration of emetic plants, amounting to 75, ‡ and then gives the following list of those plants which he has ascertained to possess some emetic virtues:—

* Historia Naturalis Brasiliæ. Folio. 1648. See p. 101.

† Specimen Materiæ Medicæ Brasiliensis, exhibens Plantas Medicinales quas in itinere per Brasiliam, annis 1817–1820 observavit. Ex Actis Monacensibus seorsim impressum. 4to. 1824.

‡ Bulletin de la Societé Philomatique, 1823, p. 127.

Lycopodiaceæ: Lycopodium clavatum, Selago.
Melanthaceæ: Colchicum autumnale; Veratrum album, nigrum, viride, Lobelianum.
Asphodeli: Scilla maritima.
Iridæ: Iris florentina, Pseudo-Acorus, Germanica.
Smilaceæ: Paris quadrifolia. (Anne Medeola Virginica virtute emetica gaudet?)
Aristolochiæ: Asarum Europæum, Canadense.
Thymeleæ: Daphne Mezereum; Dirca palustris.
Polygoneæ: Polygonum aviculare; (Coccoloba?)
Nyctagineæ: Boerhaavia hirsuta; Pisonia fragrans.
Rhinantheæ: Veronica Virginica.
Scrophularinæ: Gratiola officinalis, Peruviana; Calceolaria pinnata.
Acanthaceæ: Ruellia tuberosa.
Caprifolia: Triosteum perfoliatum, angustifolium.
Vites: Hedera Helix; Sambucus nigra, Ebulus.
Rubiaceæ: Cephaëlis Ipecacuanha, muscosa, asthmatica, punicea, herbacea; Richardsonia scabra, emetica; Psychotria emetica, cordifolia, crocea; Chiococca anguifuga, densifolia; Manettia cordifolia; Exostemma floribundum, caribæum.
Apocyneæ: Potalia amara; Strychnos nux vomica; Echites suberecta; Apocynum androsæmifolium; Rauwolfia vomitoria, (Afz.)
Asclepiadeæ: Cynanchum lævigatum, vomitorium, Lam. (Ipecacuanha, Retz.) tomentosum, Mauritianum Comm., Vincetoxicum; Secamone emetica; Asclepias asthmatica; Periploca ciliata.
Lobeliaceæ: Lobelia Tupa, inflata, syphilitica, longiflora.
Meliaceæ: Guarea trichilioides.
Rhamneæ: Ilex vomitoria; Rhamnus Frangula.
Cruciferæ: Raphanus sativus,
Geraniæ: Impatiens noli tangere.
Ionidiæ: Ionidium Ipecacuanha, polygalæfolium, brevicaule, urticæfolium; Viola odorata, tricolor.
Polygaleæ: Polygala Poaya, glandulosa, Senega.
Guttiferæ: Garcinia Cambogia.
Cucurbitaceæ: Bryonia dioica.
Passiflorеæ: Passiflora quadrangularis.
Euphorbiaceæ: Euphorbia Ipecacuanha, corollata, officinarum, cyparissias, Gerardiana, sylvatica, Lathyris, Tirucalli; Jatropha Curcas; Ricinus communis, viridis; Hura crepitans; Croton Tiglium.
Sempervivæ: Sedum acre.
Papaveraceæ: Sanguinaria Canadensis; Podophyllum peltatum.
Ranunculaceæ: Actæa spicata.
Lineæ: Linum catharticum.
Rosaceæ: Gillenia trifoliata. (Spiraea L.) stipulacea.

In this memoir he particularly describes * *Cephaëlis ipecacuanha, Richardsonia scabra, R. emetica,* * *Polygala Poaya, Ionidium ipecacuanha,* * *I. brevicaule,* * *I. urticæfolium,* * *Chiococca anguifuga,* * *C. densifolia,* * *Manettia cordifolia,* with plates of those to which an asterisk is prefixed, and two plates containing twenty-one figures of the different emetic roots.

Auguste de Saint-Hilaire, in the valuable work on the plants of Brasil, which he is now publishing,* of which I have seen eleven numbers, has also treated largely of the emetic plants. He says that the term *Ipecacuanha* is unknown in every part of the Brazils that he traversed, and that the root of the *Cephaëlis ipecacuanha,* and of every plant substituted for it, is generally known in the country by the name of *Poaya,* which is not in accordance with the statement of M. Lemaire-Lisancourt.—(A. D.)

Ipecacuan.—The white ipecacuan, *Ionidium calceolaria,* contains, according to M. Pelletier, 9 grammes of emetine in 100 grammes of the root; and the true white ipecacuanha of Brazil, or *Ipecacuanha blanca* of Piso, contains 15 grammes in 100 of the root, according to the analysis of M. Vauquelin.

* Plantes usuelles des Brasiliens, 4to, 1824, &c.

M. Henry has extracted from the bark of the root of ipecacuanha $\frac{1}{16}$ resin and $\frac{1}{6}$ aqueous extract, and from the woody part $\frac{1}{32}$ of resin and $\frac{1}{8}$ of aqueous extract; also the meditullium is not, as was until lately thought, entirely destitute of properties. It may be used, but requires a larger dose.—Ch. and R.

M. Boulduc inserted, in the Memoirs of the Royal Academy of Sciences for 1700 and 1701, several essays on the analysis and effects of ipecacuan. The conclusion to which he came was, that the violence of its action depended entirely on its resinous principle. This was shown to be erroneous by MM. Lassone Junior and Cornette, who read in 1779 to the Royal Society of Medicine a memoir* on the analysis and properties of the different constituent parts of the ipecacuan root. The principal results of their inquiry were, that the woody part of the ipecacuan was nearly as emetic as the cortical, and that the extractive principle, well prepared, also possessed this property, although in a less violent degree.

The Harveian Society of Edinburgh, in 1784, proposed ipecacuan as the subject of an experimental essay. The prize was awarded to Dr Ralph Irving. His essay was not published, but a notice of some of the results was inserted in a periodical work. † He ascertained that the cortical part was more powerful than the ligneous; that even the ligneous part possesses a very considerable degree of emetic power; and that the powder first obtained in pulverizing the root is the most powerful, as the cortical part yields first to the pestle. He likewise found that the emetic property does not reside in the resinous principle, but in a principle soluble also in water.

M. Henry made a comparative analysis of the bark and wood of ipecacuan. ‡ He found that from a hundred parts of the bark ether extracted 7 parts; rectified alcohol, 6; cold water, 18; and boiling water, 25; while from the same quantity of wood there was extracted by ether 3 parts; alcohol, 2.5; cold water, 14; and boiling water, 28. He found that the activity of the root resided in both the resin and extract, four grains of the former and eight grains of the latter being sufficient for a dose.

Ipecacuan was also made the subject of investigation by M. Masson-Four. § His chief object was to improve the pharmaceutical preparations of this root, and he ascertained that its virtues were most advantageous extracted by alcohol of 20°. (Specific gravity, 935.)

The discovery of emetine, as a peculiar principle in which the active virtue of ipecacuan exclusively resides, is entirely due to M. Pelletier, whose researches were made in conjunction with M. Magendie. They were read to the Academy of Sciences in 1817. || A report upon them was drawn up by MM. Halle and Thenard, the

* Histoire de la Société Royale de la Medecine, Année 1779. 4to. Paris, 1782. See p. 512.

† Edinburgh Medical Commentaries for 1785, by Andrew Duncan, Vol. x. See p. 340.

‡ Annales de Chimie, T. lvii. 1806. See p. 28.

§ Bulletin de Pharmacie, T. i. Paris, 1809. See p. 161.

|| Journal de Pharmacie, T. iii. See p. 145.

committee appointed for that purpose,* and an abstract published by M. Robiquet.† The results of Pelletier's analysis of the bark and wood of the common brown annulated ipecacuan is subjoined, to which I have added the results of the analysis of the former by A. Richard. ‡

	Bark.	Wood.	Richard.
Emetine, -	16	1.15	16.
Fatty matter, -	2	traces }	1.2.
Wax, - -	6	... }	
Resin, - -	...	...	1.2
Gum, - -	10	5.	2.4
Starch, - -	42	20	53.
Extractive, not emetic,	...	2.45.	...
Albumen, -	...	...	2.4
Lignine, - -	20	66.6	12.5
Gallic acid, -	...	...	traces
Loss, - -	4	4.8	11.3
	100.	100.	100

The red annulated variety of ipecacuan was also examined by M. Pelletier, and found to contain emetine, 14; fatty matter, 2; gum, 16; starch, 18; lignine, 48; loss, 2 = 100. § The striated ipecacuan, the root of the *Psychotria emetica*, contained emetine, 9; fatty matter, 12; lignine, gum, and starch, 79 = 100. || The root of the *Cynanchum vomitorium* of Lamarck gave emetine, 5; gum, 35; vegeto-animal matter, 1; lignine, 57; loss, 3 = 100. ¶ The root of the *Viola ipecacuanha* yielded to Richard and Barruel emetine, containing a little saccharine matter, 3.5; fatty matter, ...; starch, 54; extractive soluble in water, and containing a new crystallizable principle, 22.; lignine, 19; gallic acid, traces, = 100.** Buchner †† and Pfaff ‡‡ have given good views of what has been done on this subject; and it is not superfluous to refer to the excellent articles by Merat §§ and A. Richard, |||| and to restore to Gomez ¶¶ the honour of having corrected the botanical description of the ipecacuan plants, which for a time was assumed by Brotero. ***—(A. D.)

* Recueil periodique de la Societé de Medicine, redigé par Sedillot.
† Annales de Chimie et Physique, T. iv. See p. 172.
‡ Dictionnaire des Drogues, T. iii. p. 261.
§ Journal de Pharmacie, T. iii. p. 157.
|| Ibid. T. vi. p. 261.
¶ Ibid. T. iii. p. 158.
** Histoire Naturelle et Medicale des differentes espéces d'Ipecacuanha du Commerce, par A. Richard. Paris, 1820.
†† Buchner's Repertorium, Bd. vii. p. 289.
‡‡ System der Materia Medica nach chemischen Principien, 6to Bd. Leipzig, 1821.
§§ Dictionnaire des Sciences Medicales, T. xxvi. p. 1.
|||| Dictionnaire des Drogues, T. iii. p. 256. Histoire Naturelle et Medicale des differentes espéces d'Ipecacuanha du Commerce. Paris, 1820.
¶¶ Memoria sobre a Ipecacuanha fusca do Brasil, ou Cipo das nossas boticas. Lisbon, 1801. See also a paper by Virey in the 6th Vol. of the Journal de Pharmacie, p. 267.
*** Transactions of the Linnæan Society of London, Vol. vi. p. 137.

IPECACUAN.—The celebrated Daubenton,* who is one of those who has contributed most to propagate the employment of ipecacuanha, in his paper recommends to those persons whose digestion is difficult, the daily and moderate use of ipecacuan, as a sure means of remedying the defects of digestion.—Ch. and R.

JUNIPERUS COMMUNIS.—It is difficult to believe that the rob or extract of juniper is inert, when prepared from the cold aqueous infusion of its berries, and that it does not possess the power of exciting the digestive function. If a pharmacognomic map were prepared, Fontainbleau would be marked on it for the conserve of juniper, on the authority of geographers; but the fact is, that very little of it is prepared, and that it is very dear there. The forest of that district abounds in juniper bushes, and the people who are in poor circumstances prepare from them a very wholesome drink, and carry the berries to Paris. It appears from the table drawn up by William Alexander, surgeon at Edinburgh, that the volatile oil of juniper is one of the most powerful diuretics known.†—Ch. and R.

The expression of inertness in the Dispensatory was intended to be applied to the extract of juniper only as a diuretic, for it is highly probable that it possesses considerable stomachic virtues. Virey ‡ has given an account of the method of preparing the rob of juniper berries. The berries are boiled in water without crushing them. After boiling twenty minutes the decoction is filtered without expression. A second decoction is made in the same way. The liquors evaporated in the water bath to the consistence of an extract, form a very agreeable aromatic rob, slightly bitter, and a good stomachic and tonic. The dose is one or two drachms. In this way juniper berries yield about one-eighth of extract. But if the berries be crushed, as some authors advise, about double the quantity of a dark brown, thick, harsh, unpleasant extract is obtained. It has also the inconvenience of clotting during the boiling, because the particles of the resin cohere. By making this extract by *cold* maceration, a mild semitransparent rob is obtained, of an amber colour, and a sweet saccharine taste. Care must be taken to decant the infusion before its concentration to separate its resinous deposit. By the addition of sugar or honey, we get a conserve of juniper which is highly esteemed in the countries of the north.

The following are the tables of Mr Alexander § referred to:—

* Mémoire sur les indigestions, qui commencent a être plus frequentes pour la plupart des hommes a l'age de quarante, ou quarante cinq ans. 8vo. Paris, 1785.

† Tableau methodique d'un cours d'histoire naturelle medicale. Par B. Peysihle. 8vo. Paris. An. vii. See p. 387.

‡ Traité de Pharmacie, T. i. p. 382.

§ Experimental Essays, by William Alexander, surgeon in Edinburgh. 8vo. London, 1768. See p. 151.

A Table of the different quantities of urine always discharged in an equal time, viz. from nine o'clock in the morning till two o'clock in the afternoon, when an equal quantity of the same liquid was drunk, but with different diuretics, in different quantities, dissolved in it.

	℥	ʒ	℈
By lbi. ʒvii. ß simple infusion of Bohea tea, standard	15	4	
By do. with ʒij. of salt of tartar	22	7	2
By do. with ʒij. of sal. nitre	22		
By do. with 4 drops of oil of juniper	20	3	
By do. with ʒi. of salt of wormwood	19	7	1½
By do. with ʒij. of Castile soap	19	1	1
By do. with a tea-spoonful of spt. nitr. dulc.	17	6	1½
By do. with 15 drops of tinct. cantharid.	16	4	
By do. with ʒij. of sal. polychrest.	16	3	
By do. with ʒ ß of uva ursi	16	1	½
By do. with ʒi. of magnesia alba	15	5	
By do. with ʒij. of cream tart.	10	2	½

A Table of the different quantities of urine evacuated in the same space of time, after drinking the same quantity of different liquors.

	℥	ʒ	℈
By lbi. ℥vii. ß of weak punch with acid	21	2	0
By do. of new cow whey	18	6	0
By do. of decoct. diuret. pharm. Edin.	17	5	0
By do. of London porter	16	7	0
By do. of decoct. bardan. pharm. Edin.	14	7	0
By do. of warm water-gruel	14	6	2
By do. of small beer	13	7	1
By do. of warm new milk	11	7	0

(A. D.)

JUNIPERUS LYCIA.—It was supposed, on the authority of Linnæus, that olibanum was the product of the *Juniperus lycia;* but this opinion appears to be erroneous; for, as observed by Mr Colebrooke,* "this species of juniper is indigenous in the south of France;" and French botanists deny that it furnishes the gum-resin in question. Therefore, besides the other proofs advanced by Mr Colebrooke, olibanum, at least that which is imported from India, ought to be considered as the product of the *Boswellia serrata* of Roxburgh, notwithstanding it is still attributed to the *Juniperus lycia* in the English pharmacopœias. Lamarck thinks that the olibanum of Arabia is the product of the *Amyris Gileadanensis*, but the reasons which he has given for his opinion are not very conclusive.

The *Boswellia serrata* is indigenous in the mountains of India,

* Asiatic Researches, Vol. ix. p. 377.

and it is known there under the vulgar name of *Salaï*.—Ch. and R.

The authority upon which Linnæus ascribed frankincense to the *Juniperus lycia* is not known, and it is probably erroneous. It is certain that the East Indian frankincense is the product of the tree described by Roxburgh and Colebrooke, and now called *Boswellia serrata;* but it is still doubtful what tree yields the Arabian frankincense. Adanson and Lamarck refer it to the *Amyris kafal*, which, however, seems identical with the *Amyris kataf;* and it is not probable, as Hayne properly remarks, * that the same species should yield both myrrh and frankincense. Ehrenberg in his travels heard nothing of the collection of frankincense ; but at Suez he saw that drug, as brought from India, to be sent into Europe by that channel.—(A. D.)

Lactuca sativa, *Lactucarium*.—Dr François † has made this medicine known in France. As it was necessary to give it a proper name, to distinguish it from the common extract of lettuce of the apothecaries, he has called it *Thrydace*, from θρίδαξ, which in Greek signifies lettuce. To prepare thrydace, the plant must be chosen near the flowering time, and growing in a sandy soil. The juice is expressed immediately, and evaporated on plates in a stove at 120° Fahr. at most. It must be kept in well corked phials, for it in some degree attracts the humidity of the atmosphere. This juice, analyzed by John, furnished water, a kind of caoutchouc, a little bitter extract, traces of resin, some salts.

The seeds of the garden lettuce, according to M. Chereau, yield a distilled water similar to that drawn from the herb by cohobation. There remains after distillation a turbid thick residue, covered with a thin coat of oil. 128 grammes of decoction of lettuce produced 45 grammes of a soft yellowish extract, and which had no virous smell. The seeds of lettuce do not contain morphia or narcotine, according to the same pharmaceutist.—Ch. and R.

The *Thridace* of Dr François is merely the inspissated juice of lettuce, and differs essentially from the *Lactucarium* of my lamented father. The virtues of the latter are so generally known in this country, that some of its preparations have been admitted into all the British pharmacopœias. The attention of the French and German pharmaceutists has also been directed to the subject. M. R. ‡ has proposed a syrup of thridace to be prepared, by dissolving without heat twice its weight of fine sugar in the expressed juice of shot lettuce stalks. M. Caventou § did not find a trace of morphia or narcotine in the juice of the lettuce ; and it was concluded that the

* Getreue Darstellung, Bd. x. p. 47.
† Journal de Pharmacie, T. x. p. 23 ; also Journal de Chimie Medical, T. i. p. 299.
† Journal de Pharmacie, T. xi. p. 397.
§ Journal de Chimie Medicale, T. i. p. 300.

action of thridace was altogether different from that of opium, having the effect of procuring calm and sleep without fatigue, suspending the functions or contracting the pupils. M. Dublanc Junior * also examined thridace without finding in it morphia. The inspissated juice had the colour of extract of dandelion evaporated by steam, a peculiar slightly virose odour, and a taste at first sweetish and saccharine, but afterwards remarkably bitter. Its reaction was acid. Of 30 parts 22.5 were soluble in alcohol, which contained the virtues of the herb. M. Lalande Junior † has suggested as an improvement upon the preparation of thridace, to gather the shot lettuce, strip the stalks of the leaves, and peel off the bark with an ivory knife. The bark of the stalks is then to be pounded in a marble mortar, and the juice to be expressed. It is then to be exposed for a short time to a temperature sufficient to coagulate the albumen, and evaporated in a vapour bath to one-third, and filter. After this it has only to be evaporated at a temperature not exceeding 120°. In the course of some days a substance is obtained of a yellow colour, very deliquescent, and of a very strong bitter taste, which may be considered as pure thridace.

The first French notice of lactucarium was in 1820, when the editors of the Journal de Pharmacie, misled by the authority of the *Annales de Bruxelles,* ascribed to Bidault de Villiers what was done by my father ; but it is negligent in M. Lalande to have repeated the error after the facts were well known in France.

The Germans have examined the products of the various species of lettuce. A mere notice of my father's first observations was inserted by Dr Kastner in the periodical work of which he was editor. ‡ Dr Klink, with the assistance of Professor Pfaff of Kiel, made experiments on the fresh juice, and its action on various reagents. The inspissated juice was found to consist of 41 parts soluble in water ; 7 of wax ; 6 of resin ; 18 of caoutchouc ; and 8 loss = 80. It contained a free acid analogous to, but not identical with, the oxalic acid, and a narcotic principle like that of hemlock or henbance, but no morphia. §

Ganzel also got no morphia. || Some good observations on the preparation of lactucarium were published by Mr Schrader of Berlin. ¶ His experiments were made with the *Lactuca sativa,* not the *virosa,* as stated by mistake by Buchner in his Repertorium. He found that the juice was more conveniently and cleanly collected by a thin silver spatula than by a moist sponge, which decomposed the juice, and caused a part of the resin to be retained. The juice, when analyzed by alcohol, seemed to consist, 1st, of resinous matter soluble partly only in ether and partly in weak spirit, 342 ; matter so-

* Journal de Pharmacie, T. xi. p. 489.

† Journal de Chimie Medicale, T. ii. p. 479.

‡ Berlinisches Jahrbuch für die Pharmacie. Berlin, 1819.

§ Diss. Inaug. sistens Lactucæ virosæ et sativæ analysin chemicam, Auct. Aug. Klink. Kiel, 1820 ; also Pfaff, System der Materia Medica nach chemischen principien, Bd. vi. Leipzig, 1821.

|| Diss. In. de Lactuca sativa et Lactucario. Berlin, 1819.

¶ Trommsdorff's Neues Journal der Pharmacie, Bd. v. St. i. S. 112. Leipzig, 1821.

luble in weak spirit and in water, 363; matter soluble only in water, 35; and of residuum, not soluble in any of the preceding menstrua, 260 = 1000.

Buchner * has compiled the latest information on the subject, confirmed by his own observations; and in a subsequent volume † recommends the collection of lactucarium by making on shot lettuce plants 15–20 transverse incisions, at the distance of a line or two from each other, wiping off the milky juice with the middle finger of the right hand, and scraping it off into a vessel with a sharp edge held in the left. In this way he collected some ounces from thirty or forty plants in a few days without much trouble. Mr Schutz got from one plant of *Lactuca sativa*, 17; of *L. scariola*, 23; and of *L. virosa*, 56 grains of dry lactucarium. ‡—(A. D.)

Laurus Camphora.—Professor Robison, who witnessed the process followed in Holland, says, that the camphor is in a liquid state in the vessels in which it is sublimed. §

Zea has described a variety of camphor which is procured in South America from trees of which the botanic characters are not yet well known. This camphor is called *caratte* by the inhabitants of the country; it exudes from the bark of these trees in the form of tears.

Mr Phillips || says that the native crystals of camphor are flat octohedrons.

Camphor is sparingly soluble in water, to which it communicates its smell and its pungent taste. A litre of water dissolves about eight decigrammes, which may be again precipitated by pure potass. ¶ The addition of carbonic acid gas singularly augments the dissolving power of water with respect to camphor.—Ch. and R.

The mode of refining camphor in Holland has been more recently described very minutely by Clemandot. **

A watery solution of camphor, containing a much larger proportion than distilled water is capable of dissolving, was at one time sold in London under the title of Mr Towers's solution of camphor. The process was kept secret.—(A. D.)

Laurus Cinnamomum.—It is true that Dr Marshall, staff-surgeon of the English forces in Ceylon, stated, in 1817, that there exists but one species of cinnamon tree. Nevertheless, the brothers Nees Von Esenbeck, in their dissertation on cinnamon, have established very exactly the characters,—1*st*, Of the *Laurus cin-*

* Repertorium, Bd. xii. p. 262.
† Ibid. Bd. xxv. p. 393.
‡ Ibid. Bd. xv. p. 272.
§ Black's Lectures, Vol. ii. p. 351.
|| Dr Paris's Pharmacologia, 5th edit. Vol. ii. p. 217.
¶ Cadet, Annales de Chimie, Vol. lxii. p. 132.
** Journal de Pharmacie, T. iii. August, p. 361, numbered by mistake 321.

namomum, the true cinnamon tree of Ceylon ; 2*d*, *L. cassia*, from which the *Cassia lignea* is got ; 3*d*, *L. malabathrum*, which produces the leaves known by that name ; 4*th*, *L. Burmanni*, which gives the cinnamon of Java ; 5*th*, *Litsœa zeylanica*, or *Dawul karundu*, often mistaken for the *Laurus cassia;* 6*th*, *Litsœa myrrha*, *Laurus myrrha* of Loureiro ; 7*th*, *Laurus culilavan*, which produces the culilavan bark of the shops.—Ch. and R.

The only part of this note to which it is necessary to allude, is where the authority of Mr Marshall, * who affirmed that cinnamon and cassia were produced by the same species, is superseded by that of the brothers Nees Von Esenbeck, who still assert that they are the barks of distinct species. † I have not seen the dissertation of the German professors ; but with every respect for their great science and industry, upon this subject their authority cannot for a moment be put in competition with that of my acute friend Mr Marshall. Professor Nees Von Esenbeck never was in the country where the cinnamon and cassia are produced. Mr Marshall examined the *Laurus cinnamomum* and *L. cassia* on the spot, and made himself thoroughly acquainted with their products. He tells us positively that the *Laurus cassia* " is never decorticated," p. 253 ; that " the bark of the root is extremely bitter ; the leaves and the bark of the trunk and branches are bitter, and have in a very slight degree the taste and odour of myrrh," p. 243 ; and that the term cassia is used " to specify the cinnamon procured from thick shoots or large branches of the cinnamon tree, employing it as synonymous with the appellation coarse cinnamon."—" It is well known that the rejected cinnamon or third sort of that prepared in Ceylon, has been imported into England, and sold under the denomination of cassia." p. 253.—(A. D.)

Lichen Islandicus.‡—Willemet, Amoreux, Georgi of St Petersburgh, and Westring, have concurred in teaching us all that we know positively concerning the chemical constitution of lichens, which Linnæus had ranked among the *Algœ*. The analysis of the *Lichen Islandicus* by Berzelius is published in all chemical works ; there exists another in the chemical writings of John. §

Iceland moss is now much employed. M. Westring succeeded, by means of alkalies, in separating the bitterness of this lichen. Thirty-two grammes of subcarbonate of potass (salt of tartar, suffice to produce this effect on 500 grammes of lichen, steeped in a sufficient quantity of water to cover it. It is left to macerate for twenty-four hours. The lichen is then to be washed.

It contains 25 in the 100 of gelatinous matter. It is used as

* A description of the *Laurus cinnamomum*, Annals of Philosophy, October 1817 ; Of Cinnamon as an article of commerce, Do. November, 1817.

† De Cinnamomo, (Amæn. Bot. Bon. fasc. i.) cum tab. vii. gr. 4to. Bonn. 1823.

‡ *Cetraria Islandica* of Acharius.

§ Chemische Schriften, Bd. vi. p. 26.

food by the people of Iceland, who calculate that one ton of this lichen, well cleansed and well pressed, is equal to half a ton of wheat.

Besides this lichen, the Materia Medica admits the *Lichen aphthosus*, *Lichen à apthes*; *L. caninus*, *Lichen de chien*, (ash-coloured ground liver-wort); *L. saxatilis*, *Mousse usnée* of the shops; *L. pyxidatus*, *Le boettrier*; *L. pulmonarius*, *Pulmonaire de chêne*, (lung-wort); and the *L. coccifèrus*.—Ch. and R.

The treatises of Willemet * and Amoreux, † referred to in this note, were published along with one of Hoffman's, ‡ as answers to a prize question proposed by the Academy of Sciences at Lyons. § Georgi's paper is in the second part of the Petersburgh Transactions for 1779. || Westring's papers were published in the Stockholm Transactions. Of these last some were translated into French, ¶ and all, I believe, into German. **

Dr John's dissertation on the chemical analysis of lichens is elaborate. He began his experiments in 1811. He obtained from the *Parmelia ciliaris*, gummy matter, 46; inuline, 9; green resin, 2; extractive, soluble in alcohol and in water, 3; the same combined with some lime with an acid in excess, 3; insoluble matter analogous to prunine or cerasine, 36.9; various saline matters, 3.1 = 100. The *Parmelia pulmonaria* afforded of modified inuline, 7; bitter extractive of a brown red colour, 8; siskin green resin, having an aromatic smell when heated, 2; insoluble matter, 80; saline matters, 3 = 100. The Iceland moss, according to him, contains inuline, 8; modified inuline, which he calls lichen mucilage, 40; extractive, soluble in water and in alcohol, 10; green resin, 1.5; insoluble matter, 37.5; and saline substances, 4.5 = 100. Dr John's analysis was performed before that of Berzelius, although published after it; and in comparing them, Dr John admits that his extractive soluble in water and alcohol was probably a compound, and that he had succeeded in isolating the bitter principle discovered by Berzelius. He does not concur with that celebrated chemist in reckoning wax among the constituents of this lichen. The principle soluble in cold water Berzelius considers as a kind of starch, Dr John as a modification of inuline; but he is inclined to think both may be right, as the analogy is very great.—(A. D.)

LICHEN ROCELLA.—In France, it is at Grand-Gallargues, a village situated four or five leagues from Montpellier, that the

* Lichenographie économique. pp. 43.

† Recherches et experiences sur les divers lichens. pp. 103.

‡ Commentatio de vario lichenum usu. pp. 68.

§ Mémoires couronnés en l'année 1786 par l'Academie des Sciences, Belles-lettres et Arts de Lyon, sur l'utilité des lichens dans la médecine et dans les arts. 8vo. Lyon, 1787.

|| Scrutamen chemicum lichenum parasiticorum.

¶ Annales de Chimie, Vol. xv. p. 267; Vol. xvii. p. 67.

** Crell's Chem. Annalen, 1792, 96, 97, 99; and Gehlen's neue Allg. Journ. 1804.

tournesol *en drapeaux* is prepared. M. Chaptal * has obtained a substance in every respect similar to tournesol by fermenting the *Lichen parellus* of Auvergne, which forms the basis of archill, in urine, chalk, and potass.—Ch. and R.

Tournesol is prepared chiefly from the berries and tops of the *Croton tinctorium,* † which grows in the south of Europe and north of Africa. The summits, which are called *Maurelle,* are gathered in August and ground in a mill; the juice is then expressed, and exposed to the sun for an hour or two. The cloths to be dyed are then dipped into it and dried upon a hedge. A quantity of quicklime is at the same time slaked with urine, and the dried cloths are stretched over the surface of the mixture until they become moistened by its fumes. They are again dried in the sun, and dipped anew in the juice of the herb, and finally dried. It is the colouring matter with which the strong blue paper used for wrapping up sugar loaves is impregnated.

The tournesol or litmus cakes are prepared by the Dutch from the *Lichen rocella, L. Rocella tinctoria,* Decand. by fermenting the powdered lichen with pearl ashes and human urine. ‡—(A. D.)

Manna.—It is improper to place in the same line sugar and mannite, or sugar of manna, its principal constituent, which by its decomposition does not yield mucic acid, and is not susceptible of fermentation.—Ch. and R.

I cannot altogether admit the justness of this criticism. I am well aware of the distinction between cane sugar and mannite, but I still think that they are to be considered as two *species* of the saccharine *genus.*—(A. D.)

Manna.—The exudation of the manna of the *Fraxinus ornus,* flowering-ash, and the *Fraxinus rotundifolia* of Lamarck, only takes place from artificial incisions, and, as M. Tenore of Naples has lately stated, is not owing to the Psylli and Kermes, of which the number on this beautiful ash is very considerable, nor to the punctures made by the *Cicada orni.* It is because this latter error has been promulgated that this observation is necessary. The Calabrians call the manna which issues naturally *Manna di spontana,* spontaneous manna, and that which issues from incisions made in the bark of the tree *Manna forzatella,* forced manna. The *Manna di fronde* is that which is collected from the leaves, and *Manna di corpo* that which is extracted from the trunk.

If manna be presented to the flame, it melts, boils, and the flame which consumes it turns blue, at the same time throwing out a

* Chemistry applied to Arts and Manufactures, Vol. iii. p. 4.
† Dictionnaire des Sciences Naturelles, T. xii. p 56.
‡ Chaptal, Vol. iii. p. 6.

great number of yellow sparks. The manna of Briançon is got from the *Pinus larix*. The *Hedysarum alhagi* furnishes the manna of Persia. The name of manna of Prussia is also given to the *Festuca fluitans*.—Ch. and R.

Terenjabin is spread on the bushes like a white hoar-frost, or on the soil in small white grains. It has the taste of wafers made with honey, and it has been compared to common macaroons. It is kneaded and made into cakes, which are now sold in the shops of the Persian Gulf.* This substance is probably the liquid manna of Pomet and some other authors, and differs from that of the *Hedysarum alhagi*. However, if Murray be consulted, there then arises some uncertainty, for he makes no doubt in regarding it as the same which under the form of grains is gathered near Ispahan, and to which the Arab physicians give the name of terenjabin and trungibin, changed by some authors into tarandjubin, &c. Lastly, this may be the same manna which Matthiolus and Bauhin have called *Manne orientale de mastic*. This question would merit investigation, if it were otherwise more important. †—Ch. and R.

Mel.—Two kinds of sugar are recognized in honey, the one analogous to the sugar of grapes, the other to cane-sugar. This latter often appears in the fine honey of the Gatinais, under the form of brilliant grains. ‡ These two kinds of sugar, mixed in different proportions, and united to an odoriferous substance, constitute honey of good quality. The ancients regarded honey as one of the most precious substances, the bees having nourished Jupiter with it. The coins of some Greek towns had a bee for an impression, and mead was the beverage of the Roman soldiers. —Ch. and R.

Melissa officinalis.—Balm, also called *Citronelle*, from the smell of citron which it exhales, furnishes the most agreeable infusion of all the labiated plants. Besides a bitterish extract, it contains a white volatile oil, which, however, is not to be obtained without a great quantity of the plant, or cohobating the water distilled from it. For this reason it is usual to extract the volatile oil of balm from the Turkish balm, *Dracocephalum Moldavicum*, with which, according to Murray, the *Monarda didyma* is conjoined. Two other plants are also known under the name of *Mélisse*,—the balm of the woods, *Mellitis melissophyllum*, and the Canary balm, *Dracocephallum Canariense*.—Ch. and R.

* Revue Britannique, No. ii. May 1826.
† Murray, Apparatus Medicaminum, T. ii. p. 144.
‡ Thenard, Traité de Chimie, Vol. iv. p. 22.

MENISPERMIC ACID.—This acid was discovered by M. Boullay. * In a paper lately read before the Pharmaceutical Society of Paris, M. Casaseca † has called in question the existence of this acid, and asserted that picrotoxia is not a vegetable alkali, but only a peculiar bitter principle. M. Thenard had previously expressed his doubts concerning the nature of these two bodies. ‡ —Ch. and R.

MENISPERMUM COCCULUS. §—Picrotoxine should be erased from the list of vegetable alcaloids, and the menispermic acid from that of acids; for it is now admitted that the latter is composed of a small proportion of sulphuric and malic acids, coloured by bitter vegetable matter, as M. Vauquelin described it. MM. Casaseca and Lecanu Junior have ascertained that the *Cocculus Indicus* contains a notable quantity of oleic and margaric acids, besides a substance analogous to stearine. || In India, Ceylon, and Malabar, they employ the *Cocculus Indicus* for taking fish, and poisoning the water where birds come to drink. These animals are soon seized with giddiness and dimness of sight. In Europe it is employed for fishing; but besides that this practice destroys too many fish, Dr Goupil at Nemours has showed that it is dangerous to eat of fish thus intoxicated. ¶—Ch. and R.

MOMORDICA ELATERIUM, Lin., De Candolle; *Ecballium elaterium*, Richard.—The squirting gourd, or wild cucumber, furnishes three distinct therapeutic products:

1*st*, The fresh juice of its fruit, which becomes clear by simply leaving it at rest. It is then filtered and evaporated to the consistency of extract. This is the common *elaterium* of the French, that of the New Codex, &c. &c.

2*d*, The deposit formed in the juice of the cucumber, or the fecula duly dried, which was also the ancient preparation. The wild cucumbers are gathered ripe, or when they detach themselves from the stalk immediately on touching them. They are placed on a sieve above a vessel; they are then cut with a knife and the juice expressed. The parenchyme remains on the sieve, and is washed with a little water: lastly, the liquid part of the juice is poured off, and the deposit dried by exposure to the sun. This second *elaterium* ought to be light, of a very bitter taste, and white colour; adulterators are even in the habit of mixing starch with it. That

* Journal de Pharmacie, T. v. p. 5. See also Journal de Pharm. T. iv. p. 367; Bulletin de Pharmacie, T. iv. p. 1; and Journal de Pharm. T. xi. p. 505.

† Journal de Pharmacie, T. xii. pp. 99, 106, and 272; also Journal de Chimie Medicale, T. ii. p. 81.

‡ Traité de Chimie, 5me edition, T. iii. p. 739.

§ This plant is now the *Cocculus suberosus* of De Candolle.—(A. D.)

|| Journal de Pharmacie, T. xii. p. 55.

¶ Bulletin de Pharmacie, T. ii. p. 509.

which is heavy, of a cineritious colour, and harsh to the touch, should be rejected.

3d, The substance called by Dr Paris *Elatine*, and which is extracted from the fecula above-mentioned. It is to its presence that the fecula owes its virtues. Thus, according to the nature of things, the preparation of the French pharmacopœia should be the least active, for the fecula is stronger than the extract, and the elatine than the extract or fecula. Dr Paris ascertained that ten grains of the best elaterium which is to be found in the shops contains only 1.2 grains of elatine.

It deserves notice that the Edinburgh College has rejected a remedy so important from the last edition of its Pharmacopœia. *

The fruit is gathered in September, a little before its maturity. The clear juice which runs from the fruit, united to that which is obtained by expression, evaporated to a proper consistence, forms in England the elaterium of shops.

Besides the analysis by Dr Paris † there is another by M. Braconnot. ‡

The wild cucumber was much used by the ancients, who regarded every part of the plant as purgative, but erroneously, as mentioned in the Dispensatory. It is probable that the ancients gave the name of elaterium to different substances, and that by this term Hippocrates understood all violent purgatives. Dioscorides extols excessively this fruit for its great efficacy in madness and melancholy. Elaterium in dropsy produces the entire evacuation of the waters, when gamboge, the crystals of tartar, and other remedies long employed, have failed. Nevertheless, M. Orfila ascertained that its medicinal virtues may degenerate into a poisonous and baneful action.

The common cucumber contains much animal matter, according to M. Planche.—Ch. and R.

Dr Clutterbuck § has published some very valuable observations on the nature and preparation of the elaterium. He obtained the greatest quantity of the medicine by pursuing the following method, which I copy in his own words, as it has not been accurately abridged by the French translators. "The cucumbers should be gathered when as nearly ripe as possible, and without violence that might endanger their bursting. They should then be wetted by the affusion of cold water, that less of the juice when they are cut may adhere to the external surface. In this state they should be cut through longitudinally, and the juice allowed to strain through

* This is a mistake. The Edinburgh College, in the last edition of their Pharmacopœia, have merely transferred the *Elaterium* from among the preparations to the list of simples, because in Scotland it is never prepared by the apothecary.—(A. D.)

† Pharmacologia, article *Extractum Elaterii*.

‡ Journal de Physique, Vol. lxxxiv. p. 292.

§ London Medical Repository, Vol. xii. p. 1.

a fine sieve, placed in a large earthenware vessel. The seeds and surrounding pulp should be scooped out upon the sieve, and washed with repeated affusions of cold water, by which they will be freed from all adhering juice. Something will be saved also by afterwards rincing the split cucumbers themselves in cold water, from which a portion of elaterium may be collected.

"After standing a few hours a sediment is formed, from which the clear liquor is to be poured off. It is then to be thinly spread on fine linen, and exposed to the air to dry. A gentle warmth may be employed without injury; but the access of sunshine destroys the fine green colour which the substance otherwise acquires."

When well prepared, this elaterium is of a yellowish-white colour, slightly tinged with green, very light and pulverulent. From forty cucumbers Dr Clutterbuck obtained only six grains; and as an eighth of a grain seldom fails to purge violently, a single cucumber contains about an ordinary dose. The juice, after the fecula has subsided, contains very little of the active principle, five grains seldom producing any effect. The other parts of the fruit, the leaves, stalks, and root of this plant, are also nearly inactive.

The proximate analysis of elaterium by Dr Paris and Mr Faraday deserves to be repeated on a larger quantity of the substance, as they operated on ten grains only, which is much too little to furnish conclusive results.—(A. D.)

Moschus moschiferus. *La Civette.*—This name is also applied to the animals which furnish the perfume called civet, the civet-cat, *Viverra civetta*, and the zebith, *Viverra Zibetha* of the order of *Edentés.* * The animal which produces the musk is a small goat belonging to the ruminating order of animals, the *Moschus moschiferus*, as it is called in the Dispensatory; but the French name, *Civette*, might lead to confusion.

It is in the rutting season that the humour in the musk-bag becomes more abundant, more acrid, and more spirituous, when the animal, to mitigate the itching which he experiences from it, rubs himself on the rocks and against trees. It is then easier to extract and to press out this substance, which is more liquid in the living animal. †

Cartheuser observed the analogy between some productions of musk and the odorous part of urine. Musk emits a very sensible ammoniacal odour, from which it has been concluded that it is a resinous body containing a very volatile and odoriferous oil, combined with an extractive substance and a certain quantity of saline matter.‡ MM. Blondeau and Guibourt§ found that musk is composed of water, ammonia, volatile oil (stearine, elaine) gelatine, fibrine, albumen, and salts, &c.

* This is a mistake. The *Viverra* belongs to the *Carnassiers* of Cuvier.

† Werner, Dissertatio Inauguralis de Moscho.

‡ Fourcroy, Systéme de connoissances chimiques, T. x. p. 289.

§ Journal de Pharmacie, T. vi. p. 105.

Cobb has greatly praised musk against hydrophobia.* He administers it incorporated with cinnabar; but Alibert mentions having seen it given in these cases without effect. † Haller used it with advantage against epilepsy. Brookes, Wall, Cullen, and Masars, particularly recommend it. Desbois of Rochefort asserts that uniform experience proves that musk, amber, and civet, excite venery. ‡—Ch. and R.

Musk is so frequently adulterated even by those who collect it, that it scarcely occurs in commerce in a perfectly genuine state, but always more or less sophisticated. Hence the great diversity of the results of its chemical analysis is what might have been expected. Thiemann § has given a very minute analysis of both the Tonquin and Siberian musk. In the Tonquin he got of carbonate of ammonia, 10; wax, 9; resin, 1; gluten, 60; albumen and membranes, 30; potass, 1; muriate of soda, 3; carbonate of lime, 4; and he was not able to procure any volatile oil. Bucholz also examined what he considered good musk. || And lastly, Wetzter analyzed a specimen of remarkable beauty. ¶ Buchner has reduced into a tabular form the solubility of 100 parts of musk in water and in alcohol, as observed by these chemists.

	Water.	Alcohol.
Thiemann, -	90	50
Bucholz, -	70 to 85	18 to 25
Wetzter, -	55	27

The original account of the Tonquin, or Dr Cobb's remedy against hydrophobia, was published by Dr James. **—(A. D.)

Myristica moschata, L. *Myristica aromatica*, Swartz.—According to M. Bonastre, †† to whom science is already indebted for many interesting investigations, 500 parts of nutmeg are composed of—White insoluble matter (stearine), 120; buttery coloured soluble ditto (elaine), 38; volatile oil, 30; acid, nearly 4; fæcula, 12; gum, natural or formed, 6; woody residue, 270; loss, 20 = 500.

M. Lamarck, who has described accurately the genus *Myristica*, has shown that the flowers of the nutmeg are dioicous; that is to say, all the males on one tree, and all the females on another. Both want corollas, and are provided with a campanular calyx with three divisions. The male flowers have from ten to twelve

* Ph. Wirt. 1760, p. 132.
† Alib, 550, Vol. ii. Mat. Med.
‡ Cours de Matière Medicale, nouvelle edition, 1817, Vol. ii. p. 349.
§ Berlinische Jahrbuch der Pharmacie, 1803, p. 100.
|| Almanach für Scheidekunstler und Apotheker, 1805, p. 169.
¶ Buchner's Repertorium, Bd. xvi. p. 222.
** A Medicinal Dictionary, by R. James, M. D. 3 vols. folio. London, 1745. Article *Hydrophobia*.
†† Journal de Pharmacie, T. ix. p. 281.

stamina, rarely nine, with filaments united into bundles, and surmounted by long straight bilocular antheræ. The female flowers are without styles; their ovary is free, superior, oblong, terminated by two stigmata.

The nutmeg is the principal object of culture of the Banda group of islands. It thrives not only in their rich black soil, but also in the lavas of the Island of Gononey. The Moluccas were producing annually in 1796, 163,000 lbs. weight of nutmeg, and 43,000 lbs. of mace; but a violent hurricane destroyed in 1778 the greatest part of the nutmeg plantations. *—Ch. and R.

Dr John † examined a crystalline crust which had formed in some volatile oil of nutmeg. It was soluble in alcohol and ether, and again crystallized irregularly from these solvents. It was also very soluble in boiling water, one part in nineteen, and the whole concreted on cooling into a snow white crystalline mass, which had an aromatic smell and taste. They did not melt at 212°; but at a higher temperature run like oil and evaporated, leaving only a slight stain. Dr John has called this substance *Myristicine*, and Professor Gmelin considers it as a variety of camphor, *Muskatkampher*.

The fullest account of the nutmeg tree as an object of agriculture and commerce has been given by Mr Crawford. ‡ The tree itself is found even beyond the limits of the Archipelago, having been discovered in New Holland, in the southern peninsula of India, and in Cochin-China; but the produce of these places is utterly tasteless, and of no value. Well flavoured nutmegs are, however, found in New Guinea, Ceram, Gilolo, Ternate, and all the circumjacent islands, as well as in Amboyna, Bouroe, &c. But the Dutch have pretty successfully endeavoured to confine them to three of the Banda isles, Pulo Ay, Banda, and Nera. Nutmegs in commerce are divided into two sorts. The most valuable are those regularly plucked from the trees; those which fall when ripe are inferior in quality. The latter are reserved for the Indian market, the former alone exported to Europe. Good nutmeg trees yield annually from ten to fourteen pounds of nutmegs and mace together, and the produce of an English acre is about 265 pounds. In fifteen parts there are two parts of mace, five of shell, and eight of nutmegs. In the ancient commerce nutmegs were always sold in the shell, and in this natural state their preservation is attended with no difficulty; but the Dutch, in order to preserve their monopoly by sending them only in a state not capable of germinating, introduced the practice of freeing the kernels from the shell, when the nutmeg immediately becomes one of the most perishable of productions. It is singular that the consumption of nutmegs and mace in Europe has decreased since the middle of last century, although the price has considerably diminished. In 1615 about 100,000 pounds of nutmegs, and 15,000

* Asiatic Register, Vol. ?. p. 200 and 216.
† Chemische Schriften, vi. Bd. p. 61.
‡ History of the Indian Archipelago, Vol. i. p. 503; and Vol. iii. p. 394.

of mace were consumed in England. Two centuries ago the consumption in nutmegs of all Christendom was estimated at 400,000 pounds, and in mace 150,000. When the Spice Islands first fell under the dominion of the English, only 39,071 of nutmegs, and 5400 of mace were consumed in England, and in all Europe 85,960 pounds of nutmegs, and 24,234 pounds of mace. During our last possession the consumption of nutmegs was 56,960 in England, and 214,720 in Europe; and of mace 3620 in England, and 250,040 pounds in Europe. This fact also shows that mace is proportionally much less used in England than in the rest of Europe. We consume nearly one-fourth of the nutmegs imported, but little more than one-seventieth part of the mace.—(A. D.)

NICOTIANA TABACUM.—The species of tobacco analyzed by M. Vauquelin was the *Nicotiana latifolia* or broad-leaved tobacco. M. Vauquelin found in the tobacco of commerce all the principles which exist in the fresh plant, and also carbonate of ammonia. This last salt appears to arise from the decomposition of the muriate of ammonia, and the lime which are added to the tobacco to give it pungency. * The empyreumatic oil obtained by the distillation of tobacco has a strong deleterious power. † During the combustion of tobacco there are formed empyreumatic oil, pyrolignic acid, and ammonia, and it is the pricking which its acrid smoke excites on the internal surface of the cheeks, and the titillation of the salivary glands resulting from it, which are the sources of the pleasure and the habits of those who smoke tobacco.

It is to the Spanish jesuits that Europe owes the introduction of tobacco. A queen of Portugal who received tobacco from Nicot was the first to distribute it, and the plant had then the name of *Herbe à la reine;* but this sternutatory also met with opponents. James Stuart (James I.) wrote against it in England; a bull of the Pope excommunicated those who used it; Fagon, physician of Lewis XIV. to impede the use of tobacco, published a virulent thesis against it. It is true that in the heat of debate it happened to him, as it did to the bachelor who sustained the argument, to pause to take a pinch. In a pamphlet on the nicotomania which has been lately published, the author says that tobacco has produced almost as many evils as Pandora's box, and that it was the cause partly of the death of a great captain; ‡ it was at least the unforeseen cause of that of Santeuil. It deserves consideration.—Ch. and R.

OLEA EUROPÆA, Olive oil.—M. Rousseau, § by the aid of his

* Annales de Chimie, Vol. lxxi.

† On the different modes in which death is produced by certain vegetable poisons. By B. C. Brodie, Esq. Philosophical Transactions for 1811, p. 186; also Orfila, Toxicologie generale.

‡ Reviewer, Journal de Medicine, 1826, No. 25.

§ Journal de Pharmacie, T. ix. p. 587.

electrical diagomèter, has found, that of all the oils, both vegetable or animal, olive oil was characterized by the property of most feebly conducting the electric fluid. It may be stated that this oil, at a medium, acts 675 times more slowly than the others. Two drops of oil of beech-mast, or of poppy seeds, poured into ten grammes of olive oil, render the needle four times more sensible; this difference, therefore, furnishes, according to M. Rousseau, a method of detecting fraud, and determining adulterations with precision.—Ch. and R.

M. Rousseau found that elaine conducted electricity very quickly, while stearine was almost a non-conductor. He is therefore inclined to ascribe the low conducting power of olive oil to the great proportion of stearine which it contains. M. Rousseau's diagometer is constructed of discs of zinc and copper, or zinc and silver, of the thickness of the forty-eighth part of a line. The pairs are separated by imperfect conductors, acidulated water for example. One of the poles is connected with the ground and the others with a light magnetised needle, very moveable upon its axis, and in the plane of the magnetic meridian as *zero*. Thus the electricity acting both upon the needle and upon a slip of copper near it, the former charged with an electricity of the same nature, will immediately experience a deviation proportional to the force of the pile; but instead of touching the copper, M. Rousseau introduces any body whose conductibility he wishes to examine; the needle will thus remain stationary, or will be deflected according to the nature of the substance tried, and its conductibility is estimated by the quickness of the deflection of the needle, and the time it takes to arrive at its extreme tension.

M. Poutet * has proposed another method of testing olive oil suspected of being adulterated. The reagent which he employs is a solution of protonitrate of mercury, made by dissolving without heat six parts of mercury in seven and a-half of nitric acid at 38°. He puts into a phial twelve parts of the suspected oil with one part of this test, and shakes them strongly together every ten minutes for two hours, when they are left at rest. If the olive oil be pure, it will congeal in three or four hours in winter, or in six or seven in summer, and next day the upper surface is smooth and white, but the congelation is less complete, and the surface more covered with oil, in proportion to the quantity of foreign oil added.—(A. D.)

Papaver somniferum. *Poppies.*—A strong decoction of poppy heads forms with sugar a turbid mucous syrup, readily susceptible of fermentation. The process by macerating poppy heads at 60° of Reaumur (167° Fahr.) is preferable.

The fruit of the poppy has two distinct parts; the pericarp, which is medicinal, and the seeds, which are alimentary. M. Vauquelin has examined the milky juice which flows from the

* Journal de Pharmacie, T. vi. p. 77.

poppy in full vegetation. It contains morphia, meconic acid, extractive, an oily substance, &c. *

M. Ricard Duperrat, apothecary at Toulouse, has proved the existence of morphia in the extract made from poppy heads. He calls this extract *Opium indigène.* M. Peyre, apothecary-general of the military hospital of Toulon, has extracted from the poppy cultivated in Provence an indigenous opium, whose colour, smell, taste, consistence, would allow it to be mistaken for the opium of Bengal, of which it had also the medicinal virtues, but in a less degree. † M. Lainé having knowledge of the paper of Mr Young ‡ quoted in the Dispensatory, sowed, in October 1822, poppies of the variety called *aveugle*, at Malley, near Lausanne. He followed in every particular the method pointed out by Mr Young as to planting and gathering; but the gathering having been commenced too late, he was unable to give positive results. He, however, obtained opium.

M. Loiseleur-Deslongchamps has made a great many experiments on indigenous opium or extract of poppy. § M. Barbier has observed with regard to poppies, that the capsules which are intended for use must be gathered still green when filled with the proper juice, and before the seeds come to maturity. It has been ascertained that the extract of poppies grown at Naples was more powerful than that made at Paris. ‖ This is caused by the difference of climate, since the best opium of Persia is that which is gathered in the southerly provinces, according to Olivier. ¶

It is probable, however, that so many efforts will be in some degree successful, and that Europe will be able, from the resources of its own industry, to liberate itself from the tribute which it pays to Asia for the importation of opium, and which amounts to more than L. 200,000, according to the report of James Howison, who had the charge of that branch of commerce in the factories of Bengal, from the English East India Company.

Opium.—For a long time the preference was given to the opium of Thebes, the name of a province of Egypt. It appears, however, that the opium of Persia is preferable, according to a note which it is thought proper here to transcribe. "Persia is the very land of medicinal drugs. The poppy grows in Persia in great abundance, and no where does it afford so potent or so abundant a juice: hence the excellence of Persian opium, by them termed *afé-oon* or *abé-oon*, whence our name for it is derived. The poppy is ripe in June: the juice is extracted by incisions made into the

* Annales de Chimie et de Physique, Vol. ix. p. 282.

† Journal de Pharmacie, T. viii. p. 252.

‡ Edinburgh Philosophical Journal, Vol. i. p. 258; also Transactions of the Society of Arts, Vol. xxxvii. p. 23.

§ Manuel des Plantes Indigènes. 8vo. Paris, 1819. Second Part, p. 81.

‖ Bulletin de Pharmacie, T. ii. p. 223.

¶ Voyages dans l'Empire Ottoman. 4to. Vol. iii. p. 155.

head of the plant; thence exudes a viscous humour, which is collected at day-light, before the sun shines on the poppies; and so strong is the effluvium, that the gatherers are sallow, meagre, and palsied. Effects nearly similar are suffered by those who dress and prepare the juice. Bakers scatter poppy seed in the bread, as an incitement to sleep, which they consider in Persia as very salutary after meals. The Persians find the poppy extract productive of pleasant dreams, and of a sort of enchantment. The effect is perceived after an hour's time, and lasts for several hours, according to the strength of the dose. This, however, is succeeded by numbness over the whole frame." *

Moreover, by opium of Thebes, *Opium Thebaicum*, is understood select opium, possessed of all the requisite qualities.

The custom of spreading poppy seeds on bread is to be traced to the most remote times. The practice still prevails, according to Professor Murray, in many countries of Germany, in Moravia, and Hungary. The ancient poets gave to the poppies the epithets of *almum*, *cereale*, *vescum*, which proves that they looked upon it as alimentary.

According to Dr Barbier, † fulness of pulse and dilatation of the artery is one of the characteristic effects of opium. He thinks with Wirtensohn, that it is in the capillary system that we must look for the reason of this symptom.

The discovery of morphia and meconic acid has been claimed by M. Vauquelin ‡ in favour of M. Seguin. §

M. Robiquet has pointed out the best method of extracting the meconic acid. ||

The method for the extraction of morphia, inserted in the French Pharmacopœia, is also that of M. Robiquet. M. Hottot, apothecary of Paris, in some observations on the extraction of morphia, ¶ has said, that the procedure by ammonia was preferable to that by magnesia, and he supports this opinion by positive and comparative experiments. The following is his method:—

Take of opium of commerce one kilogramme; macerate it in a sufficient quantity of cold water to exhaust the opium; unite the liquors. Into the liquor half cold pour a sufficient quantity of ammonia to render it neutral or very slightly alkaline, which

* Letters from the Caucasus and Georgia, by M. and Mde. Freygan. 8vo. London, 1823, p. 325.

† Traité Elementaire de Matière Medicale, 2de Edit. T. ii. p. 681.

‡ In this, however, M. Vauquelin has fallen into an error, in consequence of his imperfect acquaintance with the labours of the Germans. Seguin's observations were read to the Institute on 24th December 1804, although first printed in the Annales de Chimie for December 1814. Sertuerner's observations were published in the first part of the 13th volume of Trommsdorff 's Journal in 1805. The discovery seems to have been made nearly at the same time by both chemists, and without communication; but Sertuerner went further than Seguin.—(A. D.)

§ Annales de Chimie et de Physique, Vol. ix. p. 282.

|| Ibid. Vol. v. p. 280.

¶ Journal de Pharmacie, T. x. p. 476.

will be about eight grammes. Let some greasy matter deposit; decant it, and add other sixty-four grammes of ammonia. Leave it to deposit for twelve hours; throw the deposit on a filter; wash it with cold water; then treat it with three kilogrammes of alcohol at 34°; add sixty-four grammes of animal charcoal; heat it in a water-bath, and when the alcohol boils, filter; the morphia by cooling crystallizes, and amounts to six or eight grammes.

It results from the researches of M. Orfila that narcotine may be given with impunity in a dose of forty grains, especially if it be dissolved in water, acidulated by hydrochloric or nitric acid. This agrees with the observations of Dr Bally, who has often administered it to the quantity of sixty grains.*

It was once thought that the chief object in preparing the cold extract of opium was to separate the narcotine by means of ether, which dissolves it without acting upon the meconnate of morphia; but Orfila, the author of toxicological chemistry, has shown, by experiments made on animals, that the extract of opium thus deprived of narcotine acts with the same energy, and appeared as exciting as that which contained the principle in question. †

In fine, though opium has been so much subjected to skilful examination, some of the peculiarities of its chemical constitution, and of its mode of action, are still undiscovered. It is said that the Chinese, who smoke opium along with tobacco, make the former undergo an operation which deprives it of its odorous and virous principle. It appears that opium is then less prejudicial, for there is not observed in them that stupor of mind and body which oppresses opium-eaters. Marsden, a very accurate observer, mentions having seen Malays, who could not pass a day without smoking opium, very healthy and vigorous. ‡ It will always be difficult to explain how it is that the Persians and Turks seek with such avidity for opium, that there is to be seen in their houses, and in public places, meetings of amateurs for the purpose of taking preparations of opium as coffee is taken here; and that after the use of this singular substance they become more lively, more strong, and quarrelsome, although opium only produces elsewhere a physical nullity, somnolence, and vertigo. §—Ch. and R.

* Journal de Chimie Medicale, Vol. i. pp. 165 and 221.

† Ibid. Vol. i. p. 224.

‡ "The *Bugis* soldiers and others in the Malay bazars, whom we see most attached to it, and who use it in excess, commonly appear emaciated, but they are in other respects abandoned and debauched. The *Limun* and *Batang Assei* gold traders, on the contrary, who are an active laborious class of men, but yet indulge as freely in opium as any others whatever, are, notwithstanding, the most healthy and vigorous people to be met with on the island."—Marsden's History of Sumatra, 3d Ed. 4to. London, 1811. See p. 278.—(A. D.)

§ Consult the Essay of M. Derosnes, Annales de Chimie, Vol. xlv. p. 257; that of M. Sertuerner, Annales de Chimie et de Physique, Vol. v. p. 21; the observations on that paper by M. Robiquet, same Journal, Vol. v. p. 275; the action of morphia and

Notwithstanding the great length of this annotation, and the valuable information contained in it, a great deal might be added; but to attempt to complete the monography of opium in this place would be preposterous. I shall therefore content myself with a few miscellaneous observations which readily occur to me.

In the first place, it is necessary to correct a mistake into which the annotators as well as many other pharmacologists have fallen, in supposing that Europe is tributary to Bengal for opium. The fact is, Bengal opium is not an article of European commerce. Its consumption is entirely confined to the nations of the East. The opium used in Europe is the product of Persia exclusively, although the chief information concerning the production of opium relates to that of Bengal. It is remarkable that Schwartze, in his excellent pharmacological work,* should express an opinion that Turkey opium is probably a mixture of the inspissated juice spontaneously flowing from the poppy-heads, with the extract got by expression and decoction, or with the unripe poppy-heads and leaves in a state of fermentation; for that good opium consists entirely of the former substance, is proved by the accounts of its production by Garcias ab Horto, † Kæmpfer, ‡ Chardin, § and Freygan. || Although it is probable that the opium of the hot climates of Southern Asia is stronger than that of the temperate regions of Europe, it does not appear that the plant itself grows to a larger size, but perhaps the contrary. Chardin distinctly states that it is four feet high (*haute de quatre pieds*), not forty, as quoted by Professor Murray of Gottingen; ¶ and when Garcias ab Horto says that the heads of those which grow in Cambaya contain thirty-five ounces (*Canada* is the Portuguese name of the measure expressed), it must apply only to a singular variety called *Caxcax;* for the poppy-heads of those grown in Persia and Bengal are not larger than those of Europe, if even so large.

The best accounts of the production of the East India opium are by Mr Kerr ** and Mr Howison. †† The very great inferiority of the Indian to the Persian opium is gradually diminishing. To improve it, an order of the East India Company, to destroy all that did not fetch a certain price when exposed to public sale, as unfit for the market, greatly contributed. But by some European gentlemen in Bengal opium is prepared in every respect equal to the

narcotine on the animal economy, by M. Magendie, Journal de Physiologie experimentale; the action of morphia on the animal economy, by M. Orfila, Annales de Chimie et de Physique, Vol. v. p. 288; the article *Opium*, Traité de matière medicale, Barbier, Vol. ii. p. 467; Report of M. Lodibert, Bulletin de la Société de Pharmacie, Vol. i. p. 87.

* Pharmakologisch Tabellen. Folio. Berlin, 1819–1826.

† Clusii exoticorum, libri x. Folio. Raphelingii, 1605. p. 154.

‡ Amœnitates exoticæ. 4to. Lemgoviæ, 1712. p. 642.

§ Voyage en Perse, T. iv. 4to. Amsterdam, 1735. See T. iii. p. 14.

|| Letters from the Caucassus and Georgia. 8vo. London, 1823.

¶ Apparatus Medicaminum, Vol. ii. p. 221.

** Medical Observations and Inquiries, Vol. v. 8vo. 1776. See p. 317.

†† Memoirs of the Caledonian Horticultural Society, Vol. i. p. 355. Edinburgh, 1814.

best of Persia. On this point I can speak with certainty, having received two considerable samples from Dr Adams of Calcutta. * In 1797 the cultivation of opium was restricted to Bahar and Benares, and discontinued in Bengal. In 1793 the sales produced L. 250,000, and in 1808–9, L. 594,978.† For further authentic information concerning the commerce of opium in the East, the works of Mr Crawford ‡ and of Mr Phipps § may be consulted.

Notwithstanding the successful trials of procuring British opium by Dr Alston, || Mr Ball, ¶ Mr Jones,** Dr Howison, and especially by Mr Young, †† I am perfectly satisfied that any attempt to obtain opium in quantity will end in disappointment, and that the land would be more beneficially employed in raising potatoes. The want of heat and the high price of labour on the one hand, and stormy winds and violent rains on the other, are insuperable objections to the culture of the poppy in Britain as a branch of agriculture.

The same objections, however, do not apply to the improvement of the production of opium in our East India possessions, so as at last to supersede the Persian opium in the European market.—(A. D.)

Pastinaca Opoponax.—M. Pelletier, from fifty grammes of opoponax, obtained—resin, 21 ; gum, 16.70 ; extractive, 0.80 ; starch, 2.10 ; malic acid, 1.40 ; lignine, 4.90 ; wax, 0.15 ; volatile oil and loss, 2.95 ; caoutchouc, a trace.—Ch. and R.

Pinus.—The *Pinus maritima*, *australis*, and *strobus*, are the kinds of pine which furnish the greatest quantity of turpentine. In France, at Bordeaux, in the Landes, it is from the liquid resin of the *Pinus maritima* that the volatile oil of turpentine is extracted. 250 of turpentine give 50 or 60 of the essence ; but the operation is carried on a little too far, for the essence is more acrid than it ought to be, and the residue (colophony) is almost black, and retains an empyreumatic odour. In North America it is from the *Pinus australis* that turpentine is extracted.

It is to M. Moringlane ‡‡ that we owe in a great measure what is known of the products furnished by the pine, and the mode of obtaining them.

* Edinburgh Medical and Surgical Journal, Vol. xxix. p. 216.

† Second Report from the Select Committee on the affairs of the East India Company. Printed by order of the House of Commons. 1810. See p. 21.

‡ History of the Indian Archipelago, Vol. iii. p. 521.

§ A Guide to the Commerce of Bengal. 4to. London, 1823. P. 282.

|| Edinburgh Medical Essays and Observations, Vol. v. p. 93.

¶ Transactions of Society of Arts, Vol. xiv. p. 253.

** Ibid. Vol. xviii. p. 161.

†† Ibid. Vol. xxxvii. p. 23 ; also Edinburgh Philosophical Journal, Vol. i. p. 253. Mr Young, when this sheet was at press, showed me sixteen pounds of opium of his own preparation, at least equal to the average commercial opium. He finds it stronger, so that in making *Tinct. Opii* six ounces go as far as eight.

‡‡ Essay of MM. Moringlane, Duponchel, and Bonastre, Journal de Pharmacie, Vol. viii. p. 329.

To the resinous products of which mention is made in the Dispensatory, may be added the following:—

Terebinthine de Boston, product of the *Pinus australis* (Willdenow), *palustris*, Michaux. * This pine in the low parts of Georgia, and towards the banks of the Mississipi, forms vast forests. The turpentine is used in making soap. The resin, pitch, and tar are employed for the preservation of vessels in America.

Terebinthine d'Amerique, *Pinus strobus* (Lin. *Species Plantar.* 1762), Weymouth pine, *Pin potiron*, *baliveau*, which grows in the province of Newhampshire, in the district of Maine, to the north of the river St Lawrence.

The *Gomme d'Orembourg* of the Russian shops, improperly named, as far as the country is concerned, for it is got far from that town, in the forests of the Oural, Volga, and the borders of the Dwina. Pallas † relates that in Russia whole forests of larches are sometimes consumed by the fires of huntsmen. The flame which seizes upon these coniferous trees reaches that part of the heart of the tree where the reservoirs of the resin exist, and in place of turpentine a gummy juice succeeds and exudes, which the inhabitants of the Volga and Oural mountains gather with care. It serves them for glueing or varnishing their bows, and they esteem it besides as a delicious food. This gum is looked upon as a substitute for gum-arabic. It is dry, reddish, its taste a little resinous, and it is perfectly soluble in water. ‡

Resine du dammar, *Pinus dammara*, § *Dammara alba*, || pitch-pine of Amboyna. Resin transparent, which, from being soft and viscous, at the end of some days becomes as hard as a stone. It is said to have the transparency and clearness of crystal. The inhabitants of Amboyna make use of damar for healing ulcers. The royal damar is employed by the Mollucca kings in fumigations, and its use is interdicted to the common people. ¶ The name of damar is derived from the Malay. *Dammara puti* signifies resin of stone.**

Resine du dombeya, produced by the *Pinus araucauria*, is little used.—Ch. and R.

* Michaux, Flor. Bor. Amer. ii. p. 204.

† Flora Rossica. 8vo. Francofurti, 1789, p. 5.

‡ A similar conversion of a resinous into a saccharine substance is observed in the *Pinus Lambertina*, as noticed in Professor Jameson's Journal, (July–September 1828.) "The whole tree produces an abundance of amber-coloured resin. That which exudes from the trees when they are partly burned loses its usual flavour, and acquires a sweet taste; in which state it is used by the natives (of California) as sugar, being mixed with their food."

§ Lambert, Monograph. Pinus abies. Loureiro Flor. Cochinch. ii. p. 780.

|| Rumphius, Amboyna, ii. p. 174, tabul. 57.

¶ A. B. Lambert, description of the genus *Pinus*. Folio. London, 1803. Vol. ii. 1824. See p. 141.

** Crawford's Indian Archipelago, Vol. i. p. 455. Vol. iii. p. 420.

PIPER NIGRUM.—Pepper contains also piperine. Piperine is not alkaline. * This crystalline substance has been recently found in the long pepper by M. Dulong d'Astafort. Before that M. Poutet had announced that it was obtained more easily from the white round pepper than from the black, because the latter contains a greenish colouring matter, from which the piperine can scarcely be freed. Piperine occurs in four-sided prisms, of which two opposite sides are evidently broader. The prism is terminated by an inclined face. The crystals are colourless, translucent, almost tasteless, insoluble in cold water, sparingly soluble in hot water, and soluble in alcohol and ether, especially warm. There is much analogy between piperine and the resin of the cubeb, which in its turn resembles copaiba. But the resin of the cubeb does not crystallize like piperine.—Ch. and R.

PIPER CUBEBA.—Cubébs, *poivre à queue*, have been analyzed by M. Vauquelin, who has extracted from them, 1*st*, a volatile oil almost concrete; 2*d*, a resin analogous to that of copaivi; 3*d*, a small quantity of another coloured resin; 4*th*, a coloured gummy matter; 5*th*, an extractive principle analogous to that which is found in leguminous plants; 6*th*, some saline substances. †—Ch. and R.

PUNICA GRANATUM.—This remedy against tænia, known to the ancients, ‡ has been recently revived. It had been formerly employed and recommended by Mr P. Breton, § according to Dr Chapotin. ‖ The following is his mode of exhibiting it. Take two ounces of the dried root of the pomegranate tree, boil them in two pints *(litres)* of water down to twelve ounces. Of this decoction sixty-four grammes (two ounces) to be given every half hour. The worm is often voided twelve hours after the first quantity has been taken. This practice may be repeated for four or five days successively, but must be suspended if the patient feels vertigos, an uneasy state and pains in the intestines. Castor oil is commonly given after the four draughts, even when the worm has been voided.

It must be observed, that to obtain a constant success from this remedy, we must always use the bark of the root of the wild pomegranate, which grows in Africa, Spain, and in some provinces of the south of France.¶ M. Pichonnier Junior, apothecary at Vimoutier, asserts that the pomegranate cultivated in the gardens

* Pelletier, Annales de Chimie et de Physique, xvi. p. 344.
† Journal de Pharmacie, T. vi. p. 309.
‡ Dioscorides, Lib. i. c. 153; Pliny, Lib. xxiii. c. 6.
§ Medico-Chirurgical Transactions, Vol. xi. p. 301. London, 1820.
‖ Journal de Pharmacie, T. x. p. 502.
¶ Journal de Chimie Medicale, T. ii. p. 77.

of the west of France is equally vermifuge. He has ascertained by repeated experiments that the fresh root is to be preferred.

According to M. Bourgeoise,* this remedy ought never to be administered until the patient has voided portions of tænia.†

M. Mitouart‡ analyzed the bark of the wild pomegranate root. He has found that it contains tannin, a matter analogous to wax, a saccharine substance, of which one part is soluble in alcohol the other in water; of these the former is crystalline, and the second has the characters of mannite; and lastly gallic acid in very notable proportion.

The bark of pomegranate is said to be substituted for Jesuits bark in Asiatic medicine. It is the remedy employed by the doctors in Persia for intermittent fevers.§—Ch. and R.

For the introduction of pomegranate bark as a cure for the tape-worm, we are indebted to a Mussulman Fakir of Calcutta, who having in a few hours relieved an English gentleman in 1804, was prevailed on to disclose his secret,|| which was then communicated by Mr Russel for general information. The first printed notice is by Dr F. Buchanan, now Hamilton.¶ Dr Fleming published** some cases in which the decoction was given successfully by Dr Pollock, who also inserted in the tenth volume of the Edinburgh Journal a case in which he ventured to give it to a child, and with perfect success. Mr Breton's two communications on the subject increased our knowledge of its effects, and have already been quoted.

Dr Gomez of Lisbon also published the results of his trials with this vermifuge;†† and to the Continental treatises already quoted, we may add a paper by M. Chevallier,‡‡ observations by Dr Wolff of Bonn,§§ and a case by M. Delaport.|||| The analysis by M. Mitouart gives no explanation of its effects. The active principle has escaped his observation.—(A. D.)

Quassia simarouba.—M. Morin of Rouen¶¶ has published analytic researches on simarouba bark. He has found that it contains, 1*st*, a resinous matter; 2*d*, a volatile oil having the smell of benzoin; 3*d*, acetate of potass; 4*th*, an ammoniacal salt; 5*th*, malic acid and traces of gallic acid; 6*th*, quassine; 7*th*, malate

* Journal de Chimie Medicale, T. i. p. 376.
† See the note sur le Colchicum.
‡ Journal de Pharmacie, T. x. p. 352.
§ Bibliotheque Britannique, September 1811. (Reference erroneous.—A. D.)
|| Mr Breton, Calcutta Medical and Physical Transactions, Vol. i. p. 364.
¶ Edinburgh Medical and Surgical Journal, Vol. iii. p. 22.
** Catalogue of Indian Medicinal Plants and Drugs, 1810, p. 33.
†† Mémoire sur le vertu vermifuge du Grenadier. 8vo. Lisbonne, 1822; Journal de Pharmacie, T. ix. p. 219.
‡‡ Journal de Chimie Medicale, T. i. p. 375.
§§ Hufeland's Journal, August 1825; and Edinburgh Medical Journal, Vol. xxvi. p. 220.
|||| Journal de Chimie Medicale, T. iii. p. 301.
¶¶ Journal de Pharmacie, T. viii. p. 57.

and oxalate of lime; 8*th*, some mineral salts, oxide of iron and silica; 9*th*, ulmine and lignine. The simarouba tree yields a milky juice.

M. Lemaire-Lisancourt has presented to the section of pharmacy a bark, which had been sent to him by M. Chereau, who had possessed it for many years in his collection under the name of False Simarouba. M. Lemaire-Lisancourt had to consult the Memoirs of the Academy of Sciences for the years 1729 and 1732, when the simarouba was first brought to France. M. Chereau found that the bark named false simarouba is covered with a warty brown epidermis, darker coloured in some specimens, easily detached, and exposing beneath a compact whitish parenchyme, like what takes place in the bark of the *Quassia amara*. The false simarouba has a very bitter, durable, and at last a nauseating taste. It is difficult to break, and possesses some elasticity. Sulphuric ether at 60°, macerated in this substance at the ordinary temperature, takes from it much of its bitter principle, but not the whole; but if recourse be afterwards had to rectified alcohol, the bark is found to be entirely deprived of its bitterness. This ethereal tincture when distilled does not present anything remarkable; what remains in the retort, evaporated in the open air, deposits on the sides of the vessel a deep coloured yellow substance, having a most intensely bitter taste, and an aromatic smell, melting when placed on hot charcoal without emitting vapours; but as it seemed disposed to crystallize, M. Chereau considers it as not perfectly pure, and is continuing his researches.

Murray * speaks of another simarouba differing from that commonly employed, but which has the same astringent properties, *tenue est, tenacius, longe pallidius, obtectum extrinsecus verrucis exiguis, fere stipitatis, valde amarum;* it must have some analogy.—Ch. and R.

Decandolle, in a monography upon the natural order of the Simarubeæ,† has distinguished the genus Simaruba from Quassia by referring to the latter the species with hermaphrodite flowers, and to the former the species with dioicous and polygamous flowers. He has also considered the *Quassia simaruba* of Wright ‡ as the same species with the *Simarouba amara* of Aublet;§ but Hayne (Bd. ix. No. 15,) still considers them as different, as, besides other slighter differences, the latter is described as monoicous and the former as dioicous, and even suggests that the former may yield the true, and the latter the spurious bark. The shops are supplied with the bark from Guaiana, which was first brought to Europe in 1713, with the information that it was used by the inhabitants as a specific against

* Apparatus Medicamin. T. iii. p. 457.
† Annales du Museum, T. xvii.
‡ Edinburgh Philosophical Transactions, Vol. ii. p. 73.
§ Histoire des Plantes de la Guiane Françoise, T. ii. p. 859.

dysentery. This was confirmed by the celebrated A. Jussieu in an epidemic which occurred in 1718.* Descourtilz quotes Aublet, as stating that the negroes when stripping off the bark take the precaution to cover their bodies, to protect them from the acrid juice which springs from the root during this operation, and causes an intolerable itching with urtication of the skin; but Aublet says merely that during the decortication of the roots a whitish juice exudes.—(A. D.)

RHEUM PALMATUM.—M. Henry, † chief of central pharmacy at Paris, whose name is always to be cited when mention is made of a substance directly useful in pharmacy, has analyzed the two rhubarbs mentioned in the Dispensatory. According to this chemist,

The Chinese rhubarb contains; a peculiar yellow colouring matter; a bland oil, growing rancid by heat; amylaceous fæcula; a small quantity of gum; tannin; woody fibre; the third of its weight of oxalate of lime; (this was pointed out by Scheel;) supermalate of lime; a little sulphate of lime; a salt with the base of potass, and a little oxide of iron.

2d, The Russian rhubarb contains the same constituent principles as the Chinese rhubarb, and in the same proportions.

3d, The rhubarb of France differs from the two former in containing more tannin, more amylaceous fæcula, and less oxalate of lime, which forms in fact only the tenth part.

According to Mr Brande, ‡ the *Rheum palmatum* contains—resin, 10; extractive matter, tannin, and gallic acid, 26; gum, 31; woody fibre, 16.3; malate of lime, 6.5; phosphate of lime, 2; water, 8.2.

Pfaff§ has found in the palmated rhubarb, by acting with water upon its root, a substance of a deep brown colour, brilliant, opaque, of a peculiar nature, of a bitter, somewhat disagreeable nauseous taste, which did not redden tournesol. He called it rhabarbarine. M. Bouillon Lagrange found, on submitting the leaves of rhubarb to analysis, that they contained a considerable quantity of superoxalate of potass and of malic acid. ||

M. Bressy, physician at Arpajon, in an essay on the distillation of saponifiable oils, addressed to the Section of Medicine, applying some ingenious ideas to the manipulation in distilling rhubarb, announced that this root, by his new process, furnished from the commencement of the operation from forty to forty-eight grammes of oil. But these experiments required to be repeated. For this

* Flore Medicale des Antilles, par M. E. Descourtilz, T. i. p. 66.
† Bulletin de Pharmacie, T. vi. p. 87.
‡ Thomson's Ann. xvii. 469.
§ System der Materia Medica, Bd. iii. p. 30; B. vi. p. 268; B. vii. p. 170.
|| Annales de Chimie, lxvii. 91.

purpose a kilogramme of Chinese rhubarb, perfectly sound, was taken. It was cut into small pieces as the author directed, and separated from the dust. After it was placed on a midriff of pewter, exactly fitted between the cucurbit and the capital of an alembic, the cucurbit filled with water, and the joinings luted, the distillation was performed. The water which passed into the receiver was colourless, and exhaled an aromatic smell analogous to that of *Cran*, or horse-radish, as M. Bressey had pointed out, but it did not carry over one drop of oil with it. The same operation repeated on a fresh quantity of rhubarb, by varying the degree of heat, did not give a better result. The product this time was only slightly amber-coloured. The same result took place with this process applied to guaiac. The liquid obtained from it was coloured, as in the second operation with the rhubarb. It was comparatively more odorous and more acrid. But no oil could be obtained. * The object in mentioning these results, although negative, is to call the attention of chemists to those saponifiable oils which hitherto have only been obtained charged with empyreuma, which deprives them of their specific characters, and gives them all the same qualities.

M. Caventou, titulary member of the Royal Academy of Medicine, has given notice of a first series of researches on the active principle of rhubarb; but it must be premised, that M. Nani, an Italian apothecary, had published that rhubarb contains a new crystallizable vegetable alkali, of which he formed a sulphate. M. Caventou ascertained that this pretended sulphate contains heterogeneous matters, and among others sulphate of lime. He has found, moreover, in the alcoholic extract of rhubarb, and by the aid either of ether or alcohol, a fatty matter containing a little odorous volatile oil, a yellow colouring principle susceptible of crystallization, and of subliming by heat without decomposition. It is to this principle that the name of ***Rhabarbarine*** ought to be given. Rhubarb contains besides a brown substance insoluble in water in its pure state, soluble in alcohol, and possessing some peculiar properties. When combined with rhabarbarine this brown matter then becomes soluble in water, and constitutes by this combination the *Caphopicrite* of several chemists, and even the *rhabarbarine* of Pfaff, which has been mentioned. These two latter denominations ought to be relinquished.

Rhubarb grows on the snowy summits of the mountains of Boutan, and on those of Dauria. It is also found of excellent quality near the rivers Oural or Jaikir, in the southern districts watered by the Jenisei (Asiatic Russia.) There is a kind of rhubarb

* Report of MM. Boudet and Chereau in 1825 to the Sect. de Pharmacie.

named *Riébas*, of which the petioles are eaten as alimentary in the vicinity of Kirmanchah, in Persia. *—Ch. and R.

All the rhubarb of commerce is brought by the Bucharians (who fell under the dominion of the Chinese about a century ago) from the Chinese town Sinin or Selin, which, with the neighbouring small towns Kautschen and Sotschen, in the government Schensi, lie between 35° and 40° N. L. The rhubarb is collected on the hills surrounding the lake Koko Norr, and at the source of the great river Chon-cho or Chong-choang. Mr Bell † found on the hills near the rivulet Kana, E. Longit. 105, N. Lat. 46, the true rhubarb in abundance, but unfortunately does not even attempt to give a description of the plant. As Mr Bell is, however, the most authentic source of information, I shall quote his account of the mode in which it is prepared for market. "This plant does not run and spread itself like docks and others of the same species, but grows in tufts at uncertain distances, as if the seeds had been dropt with design. It appears that the Mongalls never accounted it worth cultivating, but that the world is obliged to the marmots for the quantities scattered at random in many parts of the country; for whatever part of the seeds happens to be blown among the thick grass, can very seldom reach the ground, but must then wither and die; whereas, should it reach the loose earth thrown up by the marmots, it immediately takes root, and produces a new plant. After digging and gathering the rhubarb, the Mongalls cut the large roots into small pieces, in order to make them dry more readily. In the middle of every piece they scoop a hole, through which a cord is drawn, in order to suspend them in any convenient place. They hang them for the most part about their tents, and sometimes on the horns of their sheep. This is a most pernicious custom, as it destroys some of the best part of the root, for all about the hole is rotten and useless. Their gains are more considerable on this than on any other branch of trade." Sievers describes its preparation somewhat differently. After being dug up by the peasants, they are cut in pieces and strung upon threads, and dried under sheds, so that the sun may not reach them. For this purpose sometimes a whole year is required until they can be finally dressed and exported. While the special although fruitless mission of M. Sievers to discover the true rhubarb plant was highly creditable to the Russian Government, it is a mortifying example of the inconsistency of rulers to find, that a Russian ecclesiastical mission traversed in 1820–21 the very country into which Sievers in vain endeavoured to penetrate, and in which Mr Bell had seen the true rhubarb plant, without paying the slightest attention to this or any other scientific object. ‡ The root got the name of Turkey rhubarb, because at the

* Olivier, Vol. v. p. 127.

† Travels from St Petersburg in Russia to divers parts of Asia, 2 vols. 4to. Glasgow, 1763. See Vol. i. p. 311.

‡ Travels of the Russian Mission through Mongolia to China, by George Timkouski. 2 Vols. 8vo. London, 1827.

time when the commerce of the East was carried on through Natolia, it came to Europe entirely from the ports of Turkey.

The plant which furnishes this root is perhaps still somewhat doubtful; but a short sketch of the opinions of naturalists regarding it may not be uninteresting.

In 1732 some plants said to be the true rhubarb were sent from Russia to Jussieu at Paris, and Rand at Chelsea. These proved to be the *Rheum undulatum* of modern botanists, and the plant was described by Linné under the title of *R. rhabarbarum.*

Some time afterwards Kaaw Boerhaave procured from a Tartarian merchant seeds which he said were those of the plant whose root he sold. On sowing the seeds two species of *Rheum* were produced, the *undulatum,* already mentioned, and the *palmatum.*

Dr Mounsey of Petersburgh also sent in 1762 seeds to Dr Hope, which vegetated and were cultivated with great success in our botanic garden. These also proved to be the *R. palmatum ;* and Dr Hope reported, that, from the perfect similarity of the root with the best foreign rhubarb in taste, smell, colour, and purgative qualities, we cannot doubt of being at last in possession of the plant which produces the true rhubarb.* Upon these authorities these two species have been generally indicated in the European Pharmacopœias as the source of the Asiatic rhubarb.

But accurate naturalists were not altogether satisfied, and raised new scruples and doubts. When Pallas made inquiries in Bucharia, the natives declared that the leaves of the *R. palmatum* were unknown to them, † and that the leaves of the true rhubarb plant were round, and with only a few incisions on the margin. Of the species known, this description agreed best with the *Rh. compactum,* but its roots are white, and hence it was called by Pallas *Leucorhizon.* The seeds of the *R. compactum* were also sent to Millar from Petersburgh, who pronounced the roots raised by himself to be as good as the foreign rhubarb.

The Russians themselves, however, from whom all these three species were obtained, were by no means satisfied that any of them produced the genuine rhubarb.

In 1790 Sievers, an apothecary, went to Siberia under the auspices of Catherine II. chiefly with the view of promoting and improving the cultivation of the Siberian rhubarb.

After four years of persevering attempts to reach the country where the true rhubarb grew, or even to obtain the seeds or plant, he concludes in May 1794,

" My travels, as well as my acquaintance with the Bucharians, have satisfied me that as yet nobody, that is no scientific person, has seen the true rhubarb plant. All that is said of it by the Jesuits is mi-

* Ph. Tr. 1765, p. 290.

† I have not found that any naturalist has met with the palmated rhubarb in its native soil. Georgi, * on the authority of Pallas, gives the islands of the eastern sea as its habitat, and says its Russian name is *Kopitschatoi Rewen.* He adds that it differs from the true root in form, size, colour, and appearance.

* Reschreibung des Rusischen Reiche der 3ten Th. iv. Bd. p. 947.

serable confused stuff; all the seeds procured under the name of true rhubarb are false; all plantations, from those of the Knight Murray down to the flower-pot of a private individual, will never yield true rhubarb. Until further determination, I hereby declare all the descriptions in all the Materia Medicas to be incorrect."

The plant is said not to grow tall; to have round leaves, which are toothed on the margin with almost spinous points. *

Very recently another species of rhubarb, found on the Himalayan mountains, has been supposed to produce the true rhubarb. It was first described by Mr Don. †

"*R. australe*, foliis subrotundo-cordatis obtusis planis subtus margineque scabris sinu baseos dilatatis, petiolis sulcatis teretiusculis cum ramis pedunculisque papilloso scabris, perianthii foliolis ovali oblongis apice crenulatis." He found it to be identical with the *Rh. Emodi* of Dr Wallich. ‡ It does not, however, appear to be the true rhubarb. At least the roots dried by our medical officers differ from the true rhubarb in appearance and power. The latest notice of the Himalayan rhubarb is by Mr Royle. §

"By my plant collectors rhubarb has been found in large quantities on the Choor mountain, in lat. 30°, and at an elevation of about 9000 feet. There it has likewise been seen by Mr Gerard growing in rank luxuriance, also in vast beds on the hither slope of the Himalaya; and beyond them he has found the plant far more majestic, and the leaves larger and more spreading. The table land of Tartary, he informs me, is covered with rhubarb, at the height of 16,000 feet; and there is abundance of it at Ludak, in lat. 37°, from whence some of very fine quality was sent to Captain Kennedy by Mr Moorcroft; indeed it appears, that wherever travellers have been, there the rhubarb has been seen; and we may infer that it is to be found at the same latitude and elevation in all the intervening spaces."

In ascending Mount Albours near Teheran, M. Olivier found the ground covered for a long way with a species of rhubarb which the Persians call Riebas, (*Rheum ribes.*) They use the whole plant as a remedy in inflammatory diseases and ardent fevers, and employ the footstalks as an aliment. They were the first thing offered to M. Olivier at Kermanchah. They are eaten raw, after merely peeling off the skin. They are very agreeable to the taste, slightly acid, and very refreshing. They are confected with sugar, honey, and raisin-must, are preserved during the whole year, and are sent to the south of Persia where the plant does not grow. ||—(A. D.)

RICINUS COMMUNIS.—The castor oil plant grows also in Tur-

* Neue Nordische Beytrage, vii. B. Leipzig, 1790, p. 370.

† Hamilton, olim Buchannan, D. F., Prodromus Floræ Nepalensis; disposuit et descripsit Dav. Don. 12mo. Lond. 1825.

‡ Jameson's Journal, Vol. xvi. p. 304.

§ Transactions of the Medical and Physical Society of Calcutta, Vol. iii. Calcutta, 1827. See p. 440.

|| Voyage dans l'Empire Othoman, l'Egypte et la Perse, Tome troisième, p. 72. 4to. Paris, 1807.

key, Asia, Hindoostan, where the caterpillar, *Phalæna Cynthia*, (Roxburgh,) lives exclusively upon it. * The *Ricinus* thrives in the south of France. Its seed is formed of 23.82 parts of pericarp *(episperm)* to 69.09 of kernel. These 23.82 parts contain: brown resin, almost insipid, with a little bitter principle, 1.91; gum, 1.91; woody fibre, 20. The 69.09 parts of grain contain, fatty oil, (which is acrid only when it becomes rancid,) 46.19; gum, 2.4; starch and woody fibre, 20; albumen, 0.5; water, 7.09. †

Pfaff has not found any acrid principle in the husk, but a little wax along with the resin and the bitter principle. He has not found starch in the kernel. ‡

The process of extracting castor oil by expression is the best. It consists in freeing the seeds of the *Ricinus* of their husk (*testa*) by striking them with a wooden mallet, inclosing them in a strong cloth, and submitting them to the press. The oil thus obtained, and filtered through gray paper, is very clear, colourless, has little smell, and the taste is pretty sweet. Deprived of their husks the seeds lose a quarter of their weight, and yield half of their weight of oil when they have been cleaned. The *huile de ricin*, *huile d'alkatoa*, *de kerva*, castor oil, does not congeal at many degrees below the freezing point of water. It thickens in the air without losing its transparency, but stearine can be separated from it by lowering the temperature; a fact ascertained by M. Boutron Charlard. §

M. Guibourt || thinks that the kernel of the fruit of the *Ricinus* deprived of its embryo is acrid in itself; that this acrimony, slight in France, is stronger in warm climates; and that it is destroyed or volatilized by boiling with water. MM. Boutron and Henry Junior have emitted a contrary opinion. ¶ MM. Lecanu and Bussy ** have presented to the Section of Pharmacy a volatile oil, and a particular solid matter which they have obtained by distilling castor oil. Although castor oil is susceptible of rancidity, it is remarkable that, mixed with lard, it forms a composition which keeps very well. The proportions of this mixture which have succeeded were 120 parts of lard, with 32 of castor oil.

Castor oil saponifies very easily, as stated by M. Planche, to whom we are much indebted for having enabled us to ascertain the purity of castor oil, by pointing out its solubility in alcohol. ††

* Transactions of the Linnean Society, Vol. vii.

† Analyse der Samen von Ricinus: von Dr Geiger. Trommsdorff's neues Journal, Bd. ii. 2. p. 173.

‡ Pfaff, System der Materia Medica nach chemischen Principien, Bd. vi. p. 141.

§ Journal de Pharmacie, T. viii. p. 392.

|| Journal de Chimie Medicale, T. i. p. 103.

¶ Journal de Pharmacie, T. x. p. 466.

** Ibid. T. xiii. p. 57.

†† Mémoire sur l'Huile de Ricin. Bulletin de Pharmacie, Vol. i. p. 241. 1809.

This soap may be obtained by mixing five parts of oil with two of soda lye at 36°. Castor oil soap is soluble in cold water, and has been useful against some slight herpetic (scaly cutaneous) affections. Solutions of this kind keep a very long time without undergoing alteration. *—Ch. and R.

Dr Francis Hamilton † admits with Dr Roxburgh, ‡ and M. Poiret, § but one species of *Ricinus*. He found, however, four varieties very commonly cultivated in India. Two of them (*R. communis* and *R. lividus*, Willd.) are evidently included by Rheede under the title *Cit. avanacu*. They are almost always cultivated for seed, and they are, therefore, sown close so as to stint their growth, and thus bring them early to flower; and when they have ripened their seed, they are destroyed by the plough, a new sowing being more productive than if they were allowed to grow for several years; for, as Rheede observes, they will grow to be shrubs seven or eight feet high. Both are indiscriminately called by the natives *Arinda*, and often grow in the same field. The other two varieties (*R. viridis* and *R. Africanus*, Willd.) are by the natives called *Pat* (leaf) *Arinda*, because they are chiefly cultivated for their leaves, on which a large kind of silk-worm (*Phalæna* (*Attacus*) *Cynthia*) is reared for spinning a coarse silk called *Arindi*. On this account they are usually planted in hedges round the huts of those who rear the worms, and, being allowed to stand for years, acquire a considerable size.

Dr Wright || has given a detailed account of the method of extracting the oil from the seeds by decoction, as practised in Jamaica. Castor oil thus made, he tells us, is clear and well-flavoured, and if put into proper bottles will keep sweet for years, whereas the expressed oil turns rancid, because the mucilaginous and acrid parts of the nut are squeezed out with the oil. Dr Wright, therefore, prefers well prepared oil by decoction.

Our market is, however, chiefly supplied from the East Indies; and it is there also obtained by decoction after having been repeatedly macerated in cold water, and subsequently dried. Dr Ainslie ¶ has detailed the process followed in the southern provinces of India. Of the East Indian oil there are two varieties; one used as the common lamp oil, of a darker colour, a more unpleasant odour, with a considerable degree of empyreuma, and altogether of a grosser nature; the other for medicinal use, of a pure amber colour, and almost without smell or taste. On being brought to this country it is commonly filtered through paper or leather, and is sold as being *cold drawn*, or obtained by expression.

It has been a question of great interest among the French and German pharmaceutists to determine the cause of the occasional acri-

* Chereau, Journal de Chimie Medicale, T. i. p. 141.
† Transactions of the Linnean Society of London, Vol. xiv. p. 248.
‡ Hortus Bengal. 69.
§ Supplement to the French Encyclopédie.
|| London Medical Journal, Vol. viii. p. 278.
¶ Materia Indica, Vol. i. p. 256

mony of castor oil, some ascribing it to the embryo, others to the shell or husk, and others to the employment of heat in its preparation. The first is the ancient opinion, and is applied to other seeds of the same natural family. Thus Jussieu mentions it of the seeds of the *Hura crepitans;* and I have been told that its embryo alone purges drastically, while the seeds from which the embryo has been removed may be eaten as freely as almonds. M. Guibourt has examined the point with great attention, and has come to the following conclusions. The shell of the castor oil nut does not contain any acrid principle, and can only render the oil coloured without imparting to it any bad quality. The taste of the embryo is only a little more acrid than that of the perisperm, and it cannot be said that it is the only or principal seat of its acrimony. The perisperm contains at the same time the oily and the acrid principle. This acrid principle is volatile; water in the state of ebullition deprives the oil of it, and in this way it is possible to obtain an oil perfectly bland and little coloured. Too great a degree of heat, or heat too long continued, alters the nature of the oily principle itself, which acquires a more or less deep colour, and an acrimony which should proscribe its use. The facility with which the degree of heat may be exceeded, and the little acrimony of the castor nuts grown in France, should decide us, according to M. Guibourt, to submit them only to cold expression for furnishing the oil destined for medical purposes. Prof. Bernhardi * is disposed to think the acrimony owing to rancidity.

The memoirs of MM. Bussy and Lecanu on the distillation of oily substances are extremely interesting. A succinct view of the results has been given by MM. Chevreul and Thenard.† MM. Bussy and Lecanu found that saponifiable oily bodies furnished by distillation acids analogous to those which are formed by their saponification, while the oily bodies, unalterable by alkalies, or unsaponifiable, distil without the production of any oily acid. Thus cetine, oleine, and stearine, yield on distillation the oleic and margaric acids; while cholesterine and ethal do not yield fat acids. The same rule applies to castor oil; but the acids which it furnishes both by distillation and saponification are peculiar. They have named them *ricinic acid,* fusible at 22°; *oleo-ricinic,* fluid at several degrees below zero; and *stearo-ricinic,* crystallizable and fusible only at 130°. They are volatile, more or less soluble in alcohol, totally insoluble in water, and form peculiar salts with magnesia and oxide of lead. It follows that castor oil contains neither oleine nor stearine, since it does not furnish their products. In fact, when it is distilled in the usual manner, besides a little gas which is disengaged, and some water and acetic acid, it yields also a colourless and crystallizable volatile oil, and the ricinic and oleo-ricinic acids. The oil and their acids are nearly equal in quantity, and constitute about one-third, while in the retort there remains a solid matter amounting to two-thirds of the oil distilled. This substance is

* Trommsdorff's neues Journal, Bd. ii. p. 433.

† Journal de Pharmacie, T. xiii. p. 81.

of a very singular nature. It is yellowish white, spongy, and full of cavities; insoluble in water, alcohol, ether, and the oils both volatile and fixed, but soluble in the alkalies, with which it forms a kind of soap. It requires a high temperature for its decomposition, but burns readily without melting on the contact of an ignited body.

When castor oil is treated with a caustic alkali, it saponifies more readily than olive oil, and furnishes, with some glycerine, ricinates, oleo-ricinates, and stearo-ricinates. The glycerine is one-fifteenth, the stearo-ricinic acid one-thousandth part, and the rest is formed of the other acids in equal proportions.—(A. D.)

Rosa.—Professor Rau has informed us that the hundred-leaved rose, of whose origin we were till then ignorant, is indigenous in Northern Persia. * The rose-tree has not yet been found in the southern hemisphere. The new French Pharmacopœia enumerates six species of roses:—*Rosa centifolia*, hundred-leaved rose.—*Rosa gallica* (red rose), Provence rose. (This latter appellation belongs rather to the *Rosa provincialis*.)—*Rosa moschata*, musk rose.—*Rosa pallida*, pale rose.—*Rosa canina*, dog-rose; *Rosa alba*, white rose, of which there are two varieties.

Rosa centifolia is the queen of roses, and is an object of admiration in the charming pictures of Vanhuysen, of Wanspaendonk, and Redouté. Its flower is as if formed on a turning-lathe, according to Linnæus. The vulgar name of *Rose d'Hollande* belongs to a variety of this rose-tree, *Rosa maxima multiplex*, † which has flowers of a less clear red, longer petals, &c. &c.

Rosa provincialis (Willden. *Species* 2, 1070), Provence rose, originally from Barbary, imported in the time of the crusades. According to M. Thory, author of the letter-press in the fine work of M. Redouté ‡ on roses, more than five hundred varieties of the Provence rose have been produced by the cultivators in Holland. It remains to be known if they all have the same properties as the original.

Rosa moschata, the musk rose, has had the name of *Rose pestane*. Olivier has seen them thirty feet high. It is a native of Hindoostan. When mixed with Cashmere roses, it furnishes the *Attar*, or volatile oil of roses, essence of roses.

Rosa pallida, pale rose. *Rosa rubra pallidior*. § *Rosa holosericea*, a variety of the *Rosa gallica* (*versicolor*). ||

Rosa canina, *Rosa alba*. M. Merat has established several kinds of the former, and M. Desvaux has pointed out a great many varieties.

* Enumeratio Rosarum, circa Wirceburgum, &c. Auct. A. Rau, 1816.
† Tournef. Instit. rei Herb. 637. C. Bauh. Pin. 481.
‡ Les Roses. Folio. Paris, 1817.
§ Lobel. ii. Icon. 207. Bauh. p. 481. Tournefort. Instit. rei Herbar. 637.
|| Clus. Hist. 114, Icon. Prod. Monograph. Rosarum, Thory, 92.

To these officinal roses may be added three other kinds.

The *Rosa rubiginosa* (sweet-briar rose), the flowers of which have the odour of the rennet apple, and are taken in infusion as tea.

The *Rosa bifera officinalis*, perfumer's rose, rose of Puteaux, which yields the most agreeable rose water, and the *Rosa sempervivens*, often confounded with the musk rose, but which differs from its leaves being almost evergreen. Its petals furnish a doubtful purgative, often employed by the people of Tuscany.

The evergreen rose is also distinguished from the musk rose by another character, which is, that it has the styles hairy, forming a kind of twisted column.

Before quitting the subject of the roses, it remains to be said, that apparently for obtaining the attar, the flowers of the musk rose, mixed with the Cashmere roses, so renowned in the east for their beauty and their perfume, are used. The volatile oil floats on the water in which it is distilled, and is collected, whilst it is yet warm, by the aid of a rod furnished with fine cotton. The essence most sought for is that of Cashmere, the next is that of Syria. What comes from the states of Barbary is inferior. At Schiras * in Turkistan, Laristan and Kerman, a large variety of rose-tree, with white flowers, is extensively cultivated for distilling the flowers.

The Persians consume a great deal of the attar, and send it into Hindoostan and Turkey. Olivier suspects it is the musk rose, *Rosa moschata*, which furnishes the rose water of Tunis. Its flower surpasses, by the softness of its perfume, even that exhaled by the flower of the orange-tree. It scents the valleys and the glades of Northern Africa.

The rose water of Faïoum also enjoys a great reputation. Faïoum, in the neighbourhood of the Lake Keroun, a part of Upper Egypt, described by Strabo under the name of the Arsinoïte Prefecture, has had possession for a long time of this branch of industry, and of supplying all Egypt with rose water. † In this country the land destined for the culture of roses is prepared by five or six successive tillages; it is then marked out by small trenches, which divide it into beds more or less extensive, on which the plantation is made at the approach of the winter solstice. The artificial waterings then commence, and are renewed every fifteen days, at least when the land has not been flooded during the overflowings of the Nile, which takes away the necessity of irrigation.

* Rose-trees grow in abundance in the environs of Schiras. Nothing is more common in Persia than to recline on beds of rose leaves in all their freshness; and on quitting these voluptuous couches a severe cold is the certain consequence.

† Courier de l'Egypte, No. 113.

The roses are distilled in a copper alembic, differing little from ours. The apparatus is luted with the residuum, or kind of paste which the petals form after they are distilled. The proportions are 50 parts of flowers and 40 of water to obtain 25 of rose water.

The beys cause to be manufactured for their own use a superior rose water, and which must be three times cohobated.

It is singular that M. Denon, who has traversed Faioum, has not made mention of the roses of that country in his Travels in Egypt. A recent work, however, speaks of the fine harvests of roses of Faïoum.

M. Bridel has found the musk rose in a wild state in Rousillon. *

Iodine heightens the smell of the rose. †—Ch. and R.

M. Chereau, in his examination of the officinal roses, has some doubts with regard to that designated under the name of *Rosa pallida* in the British Pharmacopœias, and is inclined to consider it as a variety of the *Rosa gallica;* but this is not the case. In the Edinburgh Pharmacopœia 1783, the *Rosa damascena* of Parkinson ‡ is specified as the scientific synonym of the officinal *Rosa pallida,* and in the subsequent edition *Rosa pallida* is given as the vulgar synonym of *Rosa damascena.* For the distillation of rose water, however, all the varieties of the *Rosa centifolia* are also indiscriminately used. A work of Miss Lowry is constantly referred to by Mr Aiton§ for the delineation of the different varieties of the rose; and there is a more recent monography of Lindley,|| but I have not had access to either.

The varieties of the rose by the skill of horticulturists have become almost infinite. To the numerous kinds already in our gardens, the roses of China introduced by Lord Macartney form a very valuable addition. The passion for this charming shrub is not confined to the highly cultivated nations of Europe, but is still more ardent in the natives of warmer climates. Mr Jackson ¶ tells us that in the imperial gardens of Marocco the roses are unequalled, and "mattrasses are made of the leaves for the men of rank to recline upon." At Bussora there are whole fields of roses for the purpose of distillation, the essence and water made from these being articles of trade.** Sir William Ouseley †† notices the lavish expenditure of them at Tehran.

The process for distilling the essence, butter, ather, otter or utter of

* Bulletin de la Societé de Pharmac. for August 1826.

† Chereau, Exam. des Roses Officin. See Journal de Pharmacie, T. xii. p. 436.

‡ Paradisus Terrestris. Folio. London, 1656. See p. 413.

§ Hortus Kewensis. Second edition. 1811.

|| Rosarum Monographia. 8vo. London, 1820.

¶ Account of the Empire of Marocco. 4to. London, 1809. See p. 120.

** Geographical Memoirs of the Persian Empire. By J. Kinneir. 4to. London, 1813. See p. 291.

†† Travels in various countries of the East. 3 vols. 4to, 1823. See Vol. iii. p. 353.

roses, has been described by M. Langles,* and by Col. Polier.† The latter author informs us that in Hindostan, at Lucknow, not nearly the same quantity of oil can be obtained that is reported by Hoffmann and Homberg. To procure something less than three drachms from a hundred pounds of rose leaves without the calyxes, the season must be very favourable and the operation carefully performed. He got in 1787 only about eight ounces from a field of eleven English acres. The colour of the attar also is no criterion of its goodness, quality, or country. Col. Polier had attar of a fine emerald green, of a bright yellow, and of a reddish hue, in the same year, from the same ground, and by the same process, from roses collected on different days. In Hindostan it is usual to add to the roses when put into the still a quantity of sandal-wood raspings. The sandal contains a deal of essential oil, which comes over freely, and, mixing with the rose water and essence, becomes strongly impregnated with their perfume. The imposition, however, cannot be concealed, as the essential oil of sandal will not congeal in common cold, and its smell cannot be kept under. In Cashmere they seldom use sandal to adulterate the attar, but Col. Polier has been informed that to increase the quantity they distil with the roses a sweet scented grass, which does not communicate any unpleasant odour, and gives the attar a high clear green colour. This essence also does not congeal in a slight cold as that of roses.—(A. D.)

Sagapenum, *Gomme sagapin*, *Gomme seraphique*.—Pinkerton, in his Geography, in which natural history is considered, has given the plant the name of *Ferula communis*.‡ The following account is translated from Murray : § " The samples now before me present shapeless masses made up of several tears of different colours, whitish or reddish, or of a green brown, of different sizes, more or less pellucid, in which are impacted pieces of wood or seeds, some entire, some bruised. It may hence be concluded that these tears, at one time distinct, have been slightly agglutinated by some kind of compression when the gum was still soft. The tears of *Sagapenum* themselves are sometimes hard and friable, or sometimes they are as soft as wax. I also see that it is sometimes got in smaller distinct homogeneous tears of a red colour, which is select *Sagapenum*, and ought to be considered as the most pure. This is softened by heat and hardened by cold. *Sagapenum* is sometimes adulterated with bdellium. It easily catches fire, burning with a fuliginous flame, and leaving a black charcoal. Distilled with water it yields an ethereal oil."—Ch. and R.

Sapo.—The soaps are no longer considered as combinations of oils with alkalies, but, according to the experiments of Chevreul,

* Recherches sur la Decouverte de l'Essence de Rose.
† Asiatic Researches, Vol. i. 8vo. London, 1801. See p. 332.
‡ Vol. iii. p. 112.
§ Apparatus Medicaminum, Vol. vi. p. 232.

as saline compounds resulting from the union of the salifiable bases with the oleic and margaric acids, which are formed from the oils and fats by the reaction upon them of the alkalies. *—Ch. and R.

Sapo.—The French Pharmacopœia prescribes the fresh oil of sweet almonds for the preparation of medicinal soap, and directs it not to be employed in medicine till it be two months old.—Ch. and R.

Scillitine.—There is no proof that this principle is found in all the plants mentioned by the author of the Dispensatory, such as scurvy-grass, mustard, &c. MM. Henry Junior and Garot † have shown that scurvy-grass and mustard contain the sulphosinapic acid, a new acid which is analogous to the sulphuric, but differs from it in its elementary composition. It crystallizes in brilliant plates, reddens the salts of the peroxide of iron, &c. M. Tilloy of Dijon, besides, proved in 1820, that the scillitine of Vogel was formed by the combination of several principles, and that it was only a mixture of uncrystallizable sugar, of an excessively acrid matter, and a very bitter substance, which he succeeded in separating.—Ch. and R.

Sinapis.—These facts, viz. the large quantity of oil which is extracted from mustard seed, its insipidity, and the increased pungency of the cakes after its expression, which is much stronger than that of the mustard itself, have been recently confirmed at the Section of Pharmacy in the Academie de Medecine, by M. Robinet. ‡

The seeds of the *Sinapis alba* and *nigra* contain of acrid volatile oil, of greasy oil about 20, resin, gum, and albumen. The ashes contain a great deal of phosphate of lime and magnesia. § According to Thibierge, ‖ the seed of the black mustard contains sulphur and azote. Triturated with water and quicklime it yields ammonia.—Ch. and R.

It is rather singular that facts notoriously known in Britain as the principle upon which a branch of manufacture is established, should in France stand in need of the confirmation of an experimental chemist. It, however, accounts for the difference between powdered mustard, (flour of mustard,) used as a condiment in France and in Britain. In France, from the quantity of fixed oil it contains, it is comparatively bland, and serves as the basis and vehicle of various foreign flavours imparted to it; whereas in Britain, being deprived of its fixed oil, it becomes unfit for receiving delicate flavours, and is used solely on account of its pungency. Our continental neigh-

* Recherches sur les corps gras.
† Journal de Chimie Medicale, T. i. p. 467.
‡ Ib. T. ii. p. 347.
§ John, Chemische Schriften, Bd. iv. p. 153.
‖ Journal de Pharmacie, T. v. p. 439.

bours can have no idea of the activity of our sinapisms, when made with the best Durham mustard.

Dr John's analysis referred to is exceedingly imperfect. Its results, as stated by himself, are—a yellow, very penetrating, heavy, volatile oil, smelling like horse raddish—free phosphoric acid, phosphate of magnesia and of lime about 5 *p. c.*—a trace of phosphate of iron, perhaps combined with some manganese—oxide of iron—sulphate of lime in very small quantity—a trace of alkaline phosphate, and muriate—very little extractive—very little mucilaginous matter—brown concrete resin of a mild taste—mild, yellow, greasy oil—insoluble matter.

The analysis by M. Thibierge is more conformable to the present state of chemistry. He found black mustard seed to contain the two oils already mentioned, vegetable albumen, mucilage, sulphur, and azote; but he is wrong in thinking that heat, or a species of fermentation, is necessary for the developement of its acrid volatile oil. M. Guibourt is of opinion that the mere contact of water is sufficient,* which is more conformable to known facts.

MM. Garot and Henry Jun. by treating the expressed oil of mustard by alcohol, have obtained three new substances; *first*, a crystallizable greasy matter like cholesterine or ethal; *second*, a red colouring matter soluble in ether; *third*, a crystallizable acid consisting of carbon, sulphur, hydrogen, azote, and oxygen, to which they have given the name of sulpho-synapic acid.†

The seeds of two species of mustard are officinal in this country. Those of the white mustard are swallowed entire in doses of half an ounce or upwards, as an excellent laxative in cases of dyspepsia.‡ They act chiefly by the mucilage with which their skin abounds, and by mechanical irritation. The seeds of the black mustard are used only in powder as an emetic internally, and as a rubefacient externally.—(A. D.)

SMILAX SARSAPARILLA.—There is a spurious or gray sarsaparilla, which resembles very nearly in its external appearance that of Brazil. The large roots of this species are dotted with purplish spots, and there is not that white woody centre which all the known sarsaparillas exhibit. This creeping root is derived from the *Aralia nudicaulis*, Lin. §

There has also appeared in commerce a red sarsaparilla, but belonging, according to M. Virey,‖ to the family of Asphodels, and not to the genus *Smilax*.

M. Galileo Palotta, professor of medicine, has published a process for obtaining pure *parigline*, which is considered as the active principle of sarsaparilla.¶ Professor Folchi has extracted

* Histoire des drogues simples, 2de edit. T. ii. p. 162.

† Journal de Chimie Medicale, T. i. p. 439–467.

‡ Observations on White Mustard Seed, by C. T. Cooke. 8vo. Gloucester, 1826. Journal de Pharmacie, T. xiii. p. 191.

§ MM. Planche and Virey, Journal de Pharmacie, Vol. iv. p. 405.

‖ Journal de Pharmacie, T. xi. p. 73.

¶ Ib. T. x. p. 543,

from the medullary part of sarsaparilla a yellowish white substance, crystallizing in acicular prisms, dissolving easily in cold water, little soluble in alcohol, having little taste, tinging green the syrup of violets. M. Folchi has ranked it among the vegetable alkaloids, under the name of *Smilacine*.*—Ch. and R.

M. Guibourt, in his excellent history of simples so often referred to, has given a clear view of the commercial varieties of sarsaparilla. These are, 1*st*, that of Honduras, composed of very long roots often doubled in the bundles; 2*d*, the red, or bearded, called also from its channel of importation Jamaica, but the product of Honduras, distinguished by its colour and the presence of its radicles; 3*d*, the Brazilian, or, as it is called, Lisbon, without radicles, in bundles, and more trimmed and dressed than the others; 4*th*, Caraccas, also much dressed. Two spurious sarsaparillas have already been noticed, but the spurious red, the root of the *Agave Cubensis*, must not be confounded with the genuine. The roots of the *Carex arenaria* are called German sarsaparilla, and used as a substitute.

The results of the analysis of sarsaparilla root by different chemists are exceedingly different, either from their examining different varieties, or using different methods of procedure. Pfaff† got balsamic resin 2; acrid extractive 2.6; extractive resembling cinchonine 3.8; albumen 2.1; starch, a trace; woody fibre 75.0; moisture 2.9; and loss 0.7 = 100; on the other hand, Cannobio‡ obtained bitter acrid resin 2.8; gummy extractive 5.5; starch 54.2; woody fibre 27.8; loss 9.7 = 100. Mr Battley§ made some observations on the comparative quantity of extract furnished by the action of water on the bark, and on the wood of the different commercial varieties of this root. He found that the soluble principle resided almost exclusively in the bark, and that the red bearded yielded double the quantity of the others. This principle is scarcely acted upon by alcohol, unless greatly diluted. The infusion of the woody part, when acted upon by water acidulated with sulphuric acid, and concentrated, furnished crystals resembling discoloured ice. Professor Folchi's *smilacine* is very problematical. The same may almost be said of Dr Palottas' *paragline*, for M. Planche, who was repeating some of his experiments, has not communicated the results.

The employment of sarsaparilla in the practice of medicine, has undergone those lamentable revolutions too frequently observed. At first extolled as infallible, then utterly neglected as totally inert; and again so fashionable, that by some no chronic disease can be treated without the fluid extract.—(A. D.)

Sub-boras sodæ.—MM. Robiquet and Marchand in 1818 published observations on tincal or crude borax, and on its puri-

* Journal de Chimie Medicale, Vol. i. p. 215. Alcune ricerche chimiche su la radice d'salsapariglia. Roma, 1824.

† Handbuch der analytischen Chemie, Bd. ii.

‡ Gmelin's Handbuch der Chimie, 2te Aufl. ii. 1754.

§ London Medical Repository, Vol. xi. p. 190, and Vol. xix.

fication on the large scale, and do not think that doubts can exist as to its natural formation. They have analyzed all the known qualities of borax, pointing out the method of separating the tincal from the soapy matter which covers it, and of purifying it in quantity.*—Ch. and R.

In commerce there occur crude borax and semi-refined borax. Crude borax is in very short hexahedral prisms, more or less flattened, and pretty regularly pointed; colourless, yellowish, or greenish, always imbedded as in a matrix in a pale earthy coating, greasy to the touch, and having the smell of soap. These chemists think its formation natural, and probably, by the action of waters containing natural boracic acid, as observed in some places of Tuscany, upon muriate of soda and carbonate of lime. The presence of the fatty matter it is difficult to explain, but it is not thought to be added intentionally. Its presence greatly impedes the refining of the borax, which was formerly monopolized by the Dutch. Crude tincal, semi-refined and purified borax, all contain the same quantity of water of crystallization, about $\frac{9}{20}$, and nearly the same quantity of soda, about $\frac{7}{20}$. A specimen of English borax contained more soda and differed in physical characters. The greasy matter is saponifiable, and may be removed by lime. The refining may be afterwards completed by dissolving the borax, adding a solution of muriate of lime, and very slow crystallization.—(A. D.)

Solanum Dulcamara.—*Morelle grimpante.* M. Desfosses of Besançon † has discovered the active principle of this plant, and has given to it the name of *Solanine.* It exists in the twigs and leaves of the bittersweet, and in the berries of the *Solanum nigrum.* Pulverulent solanine is white, inodorous, rather bitter, little soluble in water, more soluble in alcohol. It is prepared by precipitating the juice of the *morelle*, or the decoction of that plant by ammonia. The precipitate is collected, dried, and then treated by boiling alcohol, which on cooling deposits the solanine. The salts of solanine are neutral, bitter, and crystallizable. MM. Chevallier and Payen ‡ have found this alkaloid in the *Solanum verbascifolium.* It was thought that the berries of the bittersweet, which assume a fine red colour when arrived at maturity, were poisonous. M. Dunal § has shown that this was an error.—Ch. and R.

The dulcamara twigs have been analyzed by Professor Pfaff || before the discovery of solanine. He got, besides a very volatile narcotic principle, a peculiar bitter principle of a honey smell and sweet after

* Journal de Pharmacie, T. iv. 1818, p. 97.
† Journal de Pharmacie, T. vi. p. 374. and T. vii. p. 414.
‡ Journal de Chimie Medicale, T. i. p. 517.
§ Histoire Naturelle Medicale et Economique des Solanum. 4to. Paris, 1813. See p. 73.
|| System der Materia Medica, Bd. vi. p. 505.

taste, (*Picro-glycion,*) forming about one-fifth. The other principles were of less importance. M. Desfosses got solanine from the berries of the *Solanum nigrum* and *S. dulcamara,* as well as from the twigs of the latter species, whereas the leaves of the former did not contain it, nor the berries of the *S. tuberosum.* In the dulcamara he also got a sweet substance, to which he gave the name of *Dulcarine,* but it is probably only a modification of uncrystallizable sugar. Another species of *Solanum,* the *Pseudoquina* of Brazil, has been analyzed by M. Vauquelin, * who has found its active principle to resemble *Colocynthine,* in being precipitated by infusion of nut-galls, but not by acetate of lead or nitrate of silver. It contains no azote.

Solanine seems to possess considerable power as a narcotic. Two grains affected a young dog. Dr Schlegel also has related cases in which the decoction of dulcamara, † and its extract, ‡ produced narcotic effects. In the last case, a young man with a cutaneous complaint had taken the decoction of a handful of the fresh twigs daily for fourteen days without any effect. On the fifteenth, having taken also an ounce of the extract in solution, he was seized with cramps in the calves of the legs, slept during the whole night, but on awakening in the morning found his head vacant, (wust,) vertiginous, *muscæ volitantes ;* pupils greatly dilated ; cramp of the legs and arms ; inability to speak, with swelled stiff tongue ; pulse slow and intermitting ; cold sweat, and trembling of the limbs. These symptoms soon went off after taking a solution of subcarbonate of potass.—(A. D.)

Strychnia, when pure, is not reddened by nitric acid, according to the latest observations of M. Robiquet. It is reddened only when it contains Brucine. It is not irrelevant to mention, that strychnia crystallizes in very much elongated octohedrons, and that before it be decomposed by heat it begins to melt. These are the characters of its purity. §—Ch. and R.

Succinum.—Amber is found in the Baltic at an hundred feet of depth, in strata of coal, where it occurs in blocks of different sizes. Storms often throw it up, and it is thus that it is found on the banks of Samland, near Pillaw, on a bank of earth made by the Frisch-Haff, (lake.) M. Virey has published a very learned disquisition on amber, which confirms the opinion of the present day that it is of vegetable origin ; an opinion, however, published by Pliny and the ancient naturalists. ‖ We refer to this essay.

Amber dissolves in sulphuric acid, which it colours red, and is precipitated from this solution by water. ¶—Ch. and R.

* Journal de Pharmacie, T. xi. p. 49.

† Materialien für die Staatsarzneiweissenschaft, B. viii. 3. 89–99.

‡ Hufeland's Journal, February 1822.

§ Note on the Extraction of Strychnia, by M. Robiquet ; Journal de Pharmacie, T. xi. p. 530.

‖ Journal de Pharm. for 1822, p. 112.

¶ Pharmac. Lusitanica, p. iii.

TEUCRIUM MARUM, *Germandrée maritime.*—Water germander is rather rare; it has small oblong leaves of a pale green, and exhaling a strong smell, but rather balsamic. Peyrilhe has called it heroic, Hermann Boerhaave, Linnæus, Rosenstein, have mentioned it as a strong cephalic, and all those who have spoken of it have not been sparing of its praises. The volatile oil obtained from it by distillation resembles that of the scurvy-grass, according to Hoffmann. It has a penetrating taste and smell. *—Ch. and R.

VALERIANA OFFICINALIS.—The root of valerian yields a fluid volatile oil of a pale greenish colour, which becomes yellow by time, of a pungent odour, and an aromatic taste. It grows viscous by exposure to the air, forming with nitric acid an orange yellow resin, having a strong odour, and specific gravity 0.934.† Besides the officinal valerian, there is the great valerian, *Valeriana phu*, known in gardens under the name of *Valeriane franche.* Its root, wrinkled and transverse, is much thicker than that of the preceding species; its stalks are bifurcated, and three feet high. Its stem leaves are winged, and it is triandrous; flowers disposed umbelliferously on the summit of its stalks. In Siberia, children affected with epilepsy are made to eat of it quite raw.—Ch. and R.

VIOLA.—The kinds known and used for medicine in France are the scentless violet, *Viola canina*, L.; the March violet, *Viola odorata*, L.; the wild pansy, that of meadows, *Viola tricolor*, L. var. *arvensis;* and the garden variety of the pansy, *Viola tricolor*, var. *hortensis.*

One of the generic characters is the corolla, of five petals, irregular, terminated by a spur, *postice cornuta.* The dog violet is a plant found in open woods in March and April. Coste and Willemet, ‡ and Nye Meyer, (Niemayer?) § have treated of its properties.

Viola odorata.—This species is found under hedges and in meadows. It is recognized by the suckers which it sends out. It is in the spring that it exhales its sweet odour. Its leaves, of a fine green, and rounded, resist the cold season. The single and cultivated variety is preferable, and the flowers ought to be gathered when scarcely blown. It enters into the syrup of violets and serves as a reagent.

M. Caventou has found in the root of this plant a little emetine; and in the description of emetine in the Dispensatory, it is

* J. F. Carthaseur, Fundamenta Materiæ Medicæ. Franc. 1777. T. ii. p. 483.
† Trommsd. Journal de Pharm. xviii. 1, 3.
‡ Essai sur quelques Plantes Indigenes, p. 7.
§ Dissert. de Viola Caninâ, Medicinâ. 1785.

omitted to be mentioned that pure emetine is white, pulverulent, and unchangeable in the air.

M. Boullay has discovered *violine*, which exists in all the parts of the plant.

Violine.—This substance is alkaline; forms salts by its union with acids. It is scarcely soluble in water, but is soluble in alcohol. What is to be said of the means of procuring *violine* we shall quote from the *Manuel du Pharmacien* of MM. Idt and Chevalier, to whom the author communicated his process.

Exhaust by alcohol the bruised dry roots of all that is soluble in that menstruum, unite all the alcoholic liquors, and submit them to distillation; evaporate the residuum to the consistence of an extract, and knead this in distilled water to separate the fatty matter and chlorophylle; evaporate by a slow heat the aqueous solution obtained by this means, and which contains the *violine* united with malic acid. When the solution is brought to the state of an extract, exhaust it by pure alcohol, and then treat the alcoholic solution by very weak sulphuric acid, and precipitate the *violine* from this solution by caustic magnesia or slaked lime, (or even by carbonate of lead in excess;) collect the precipitate and wash it in cold water, then treat it again by alcohol; evaporate the alcoholic solution to dryness, stirring it during evaporation. In this manner the *violine* is procured in the form of a yellow powder, which attracts the moisture of the air a little. To purify it, let it remain for some days in distilled water; the colouring part is dissolved in the water, while the *violine* remains insoluble in the form of a white powder. *Violine* is very active and poisonous according to M. Orfila.

Viola tricolor, pansy or heart's ease, is recognizable by its oblong leaves, by its having no suckers, and by its inodorous corolla; it tinges the saliva green, and leaves a little acrimony; when it is strongly bruised it exhales a smell resembling peach kernels. Distilled with water, whether it be fresh or dried, it gives a little volatile oil of a very acrid taste, having the above mentioned smell. *

That cultivated in gardens communicates the fine blue colour of its corolla to water. It yields to that liquid a highly colouring principle, which may be said to be inexhaustible. Dilute sulphuric acid, according to M Chereau, turns this fine blue colour to red. The acetate of lead produces in it an abundant precipitate, and colours the solution green; the alkalies, ammonia, the subcarbonate of soda, produce in it same colour, and then destroy it; this disappearing of the colour takes place instantaneously, and the colour is not changed to a yellow which has any permanency,

* Hasse, Diss. de Viola Tricolor. P. 7.

as is mentioned by Lewis. * Cream of tartar, boiled with the infusion of garden pansy in distilled water, does not alter its colour, and might form a mordant for it. In this manner a durable blue ink may be made. The solution of tin gives it a rose colour. Chloric acid has little action upon it.

The richness of the blue colouring principle of this flower has suggested that it might be insulated, and that a substance analogous to indigo might be extracted from it; and although many processes have been tried with this view, and among them that of M. Vitalis by fermentation, none have succeeded. It is proper here to mention this, to draw the attention of those who delight in these kind of researches. The great solubility of the colouring matter is adverse to its insulation.

Sixty-four grammes of the garden pansy, dried with precaution, have given twenty-four grammes of dried herb, exhaling in a very sensible manner the odour of fresh dulcamara, which it communicates to water by infusion.

The variety *bicolor* has been recommended in *Crusta lactea*. † Cattle, goats, and sheep, are fond of the violet.—Ch. and R.

Since the preceding pages were at press, I find in Hayne ‡ that Dr Niemeyer is the author of the dissertation referred to. § By his experiments it appeared that the roots of the *Viola canina* are emetic and purgative, which properties are, however, probably common to all the species which have perennial roots. The herb of the *Viola odorata* was one of the five emollient herbs of the ancients, and the flowers one of the four cordial flowers. According to Hayne it is quite impossible for an apothecary in a large city to collect a sufficient quantity of the flowers of the March violet to supply the demand for the syrup of violets; and hence they are obliged to substitute the flowers of the *Aquilegia vulgaris* and *Viola tricolor grandiflora* to give the colour, and orris root for the smell. Litmus ought on no account to be employed, as it is not changed to green by alkalies, and, therefore, does not serve the purpose of a chemical test. The seeds of the March violet were used as a diuretic, and even against gravel; and it is said that they expelled a number of small calculi from the Emperor Maximilian. ||

Of the *Viola tricolor grandiflora*, the whole plant in flower was officinal under the name of *Herba Jaceæ* or *Trinitatis*. When recent it has a mucilaginous somewhat acrid taste. By drying, according to Remler, it loses 7–8ths of its weight; and, according to Haase,

* Newmann's Chem. 430.
† Balbis, Elenco della piante.
‡ Bd. iii. p. 3.
§ Dissertatio Inaug. de Violæ Caninæ in Medicina usu. Goetting. 1785.
|| Scholz. Epist. 192, p. 310.

the dry herb yields only 1–8th of extract. * By distillation a volatile oil may be procured lighter than water, having the kernel smell, and a somewhat acrid taste. It is diuretic, but in large doses purgative and emetic. Strack has recently recommended it as specific in *Porrigo larvalis;* and good effects have also been observed by some others, while with others when used alone it has seemed to be inert or insufficient. The *Viola bicolor* is merely a subvariety of the *V. tricolor parviflora*, and it is said to have been found in Sweden less efficacious than the *grandiflora*.—(A. D.)

* Diss. de Viola Tricolore.

PREPARATIONS AND COMPOSITIONS.

Sulphuret of Potass is prepared by M. Beral, apothecary, with pearl ashes. He makes a mixture of fifteen parts of pearl ashes with forty of sulphur; the mixture is placed in a smelting furnace until it is in the state of a sufficiently liquid paste; it is then poured out on an oiled slab, and the sulphuret is made. One of the inconveniences of this process is, that the product contains sulphuret of iron, which gives a greenish colour to the liver of sulphur, and consequently discolours the skin of the bather. It also happens that when the operation is nearly finished, the sulphur easily inflames, and then we cannot know the quantity of sulphur lost to the sulphuret. The impurity of the alkali might also be objected to.

It is preferable to employ the sub-carbonate of potass, obtained from the combustion of tartar, (salt of tartar.) Take two parts of this with one of roll sulphur reduced to powder; fill two thirds of a matrass with it, after having placed it on a sand bath; make a slow fire at first, which is afterwards to be raised, and continued until the composition appears to liquify. The sulphuret of potass thus obtained is of a fine yellow colour, and perfectly soluble in water, which it decomposes, and disengages sulphuretted hydrogen in great quantity. The number of matrasses are proportioned to the quantity of sulphuret which is required. This is the process of M. Henry.

The proportion of sulphur may in this case be increased, for the purer the alkali is the more sulphur it requires; but it is to be regretted that salt of tartar is little employed. It is from the potashes of Tuscany and others still less good that the sulphuret is made; and among all those of commerce, the pearl ash is, however, the least impure.

That the sulphuret should flow well, it is not sufficient that the paste should be in a liquid state; it must remain in tranquil fusion; for as long as it swells up, there is still carbonic acid to be driven off.

The flasks, or stoneware bottles, in which the sulphuret of potass is to be kept, ought to be heated, to deprive them of air and humidity (before it is deposited in them.)

M. Vauquelin has advised the employment of equal parts of dry carbonate of potass and of sulphur, which is contrary to directions of the colleges of London and Edinburgh. The result of the operation gives a compound of sulphate of potass, and sulphuret of potassium with an excess of sulphur.

A simple sulphuret or a monosulphuret is obtained by decomposing sulphate of potass, by means of charcoal at a high temperature.

The sulphuret of potass combined with hemlock, *(Conium maculatum,)* is a good palliative against cancerous affections, according to Pearson.*—Ch. and R.

The liver of sulphur of the older chemists is now universally recognized as consisting essentially of sulphur and potassium. † The proportions of the ingredients are, however, variable, as sulphur is capable of combining with sulphur in different proportions. Berzelius ‡ admits no less than eight sulphurets, containing with one atom or proportional of potassium, one, two, four, six, seven, eight, nine, or ten atoms of sulphur; but it is exceedingly probable, as Thenard thinks, § that several of these are mixtures of the determinate sulphurets with each other, or with sulphur.

Berzelius found that potassium could take up twice its weight of sulphur, and according to Vauquelin, || 100 parts of pure potass can saturate 111.5 of sulphur. On this account the latter chemist recommends equal parts of sulphur and dry salt of tartar to be employed in making the sulphuret, and therefore M. Beral must use a great excess of alkali, in employing 15 of sulphur to 40 of the salt. ¶ M. Henry** agrees with the Dispensatories in prescribing one to two.

For some purposes, such as the obtaining of precipitated sulphur, and for sulphureous baths and lotions, the sulphuret should contain a large proportion of sulphur, but for the evolution of sulphuretted hydrogen gas, the protosulphuret is sufficient.

M. Berthier †† has improved the process for preparing the protosulphurets, by decomposing the sulphates. It depends upon the property which charcoal has of disoxygenizing these salts by cementation. He directs the salt to be introduced into a crucible lined with charcoal lute, *creuset brasqué, desoxidan,* ‡‡ the vacant space to be filled up with a mixture of charcoal and clay rammed hard, the cover luted on, and then to be exposed to white heat for a longer or shorter time, according to the reducibility of the sulphate.

* Practical Synopsis, i. 283.
† Proust in Journal de Physique, T. liii.
‡ Annales de Chimie et de Physique, T. xx. p. 55.
§ Traité de Chimie, 5me Edit. see T. i. p. 556.
|| Annales de Chimie et de Physique, T. vi. p. 24.
¶ Bulletin de Pharmacie, T. vi. p. 538.
** Ib. T. v. p. 572.
†† Annales des Mines, T. vii. p. 421.
‡‡ Dictionnaire Technologique, T. vi. p. 232.

But although this method is good for the purpose of analysis, it will not serve for pharmaceutical purposes.

MM. Chevallier and Idt * recommend as preferable to that of potass, the sulphuret of soda prepared in the same way, chiefly on account of its uniformity. It is also less deliquescent.

At one time, and soon after Buonaparte proposed Croup as the subject of a prize essay, the sulphuret of potass acquired great reputation as a specific against that formidable disease. † It was given in doses of 1–4 grains to infants, and from 5–10 to adults, repeated every three or four hours, either in pills with extract of liquorice, or in solution with syrup. But Albers and Royer Collard disapproved of its indiscriminate employment.—(A. D.)

SULPHURETUM FERRI.—Sulphuret of iron may be quickly prepared by mixing two parts of iron filings, one of sulphur, and a sufficient quantity of water to temper the mass. This mixture is introduced into a balloon, and by means of heat, the action of the sulphur on the iron is caused, which takes place with the disengagement of caloric and formation of sulphuret.

This sulphuret is decomposed by acids, and produces very easily a great quantity of sulphuretted hydrogen gas, but it should be prepared only when wanted. It was thought that it was only a hydro-sulphuret. This sulphuret is that of M. Lemery.

Two parts of iron filings and one part of sulphur thrown into a red hot crucible gives a well melted and very homogeneous sulphuret.—Ch. and R.

In the recent edition of the Dublin Pharmacopœia, ‡ the old method of preparing the sulphuret of iron by applying iron rods heated to whiteness to a roll of sulphur is adopted. The fused drops of sulphuret of iron are received in a vessel of water. §

ACIDUM SULPHURICUM DILUTUM; *Esprit de vitriol.*—This diluted acid is so much used by apothecaries, that it is to be regretted that it is not inserted in the French Pharmacopœia. It is commonly made (in France) of one part of concentrated sulphuric acid, with two of distilled water; the acid is added little by little to the water. M. Parmentier directs sulphuric acid at 66°, 100 grammes, (3 ounces,) distilled water, 800 grammes, (1 pound, 8 ounces.) ||

The proportions for the diluted sulphuric acid of London are

* Manuel du pharmacien, T. i. p. 431.

† Moniteur universelle, xii. 26. Observations sur le bon emploi du sulfure de potasse dans le traitement du croup, et de la gale; et de la potasse dans les peripneumonies catarrhales, par C. M. A. Duchassin. Paris, 1815.

‡ Pharmacopœia Collegii Medicorum Regis et Reginæ in Hibernia. 8vo. Dublinii, 1826. See p. 71.

§ An account of two cases of Diabetes Mellitus, by John Rollo, M. D.

|| Code pharmaceutic à l'usage des hospices civiles, 3me edit. Paris, 1807. See p. 286.

similar to those given by Parmentier, and the acid thus diluted may suffice for the common use of apothecaries.

The sulphuric mineral lemonade is composed of common water 1 kilog.; sulphuric acid at 66°, 2 grammes; sugar, 64 grammes.

There was formerly much used in Prussia an acidulated water made with 128 grammes of water, and 12 drops of diluted sulphuric acid; it went under the name of *l'eau vitale, eau antiputride de Beaufort.*—Ch. and R.

ACIDUM NITRICUM.—The apparatus for the manufacture of this acid has been successively changed. Thus it is no longer made in earthen pots joined together and ranged in a line on furnaces called *galeres;* nor in (six) pots ranged in a double rank on the same furnace, and on six fire places, communicating by earthenware tubes with a series of large receivers. The modern apparatus is composed of four cylinders (of iron) on the same furnace. These cylinders communicate by tubes to three or four ranges of receivers, of which the two first are plunged in water. The tubes fastened to the cylinders ought to be of glass, so as to show the colour of the gas passing, which indicates the progress of the operation. The other tubes may be of earthenware. It is of advantage to place between the cast iron joint and the glass tube, a small ferule of an earthenware tube, generally about 12 or 15 centimetres long, for preserving the glass tube from the very great heat. Turf, wood, or coal, according to localities, may be used for fuel, as also in the preparation of muriatic acid.

The proportions are, of nitre 100; sulphuric acid at 66°, or of the specific gravity 1845, 60 parts.* In laboratories, the proportions are twelve parts of nitrate of potass, and eight parts of concentrated sulphuric acid. A retort, an adopter, and a tubulated receiver, compose all the apparatus. From the tubulature of the receiver, there proceeds a tube destined to carry off the nitrous vapours which are disengaged. This acid ought to be then purified in the manner directed in the Dispensatory.

The nitric lemonade, which is called oxygenated lemonade, is prepared with nitric acid 2 grammes; syrup of lemons 64 grammes; pure water 1 kilogramme.—Ch. and R.

ACIDUM OXYMURIATICUM.—For a disinfecting flask furnished with its cover and stopper, of 128 grammes, (4 ounces,) we may put 8 grammes, (2 drachms,) of oxide of manganese, and pour on it to the extent of two-thirds of nitro-muriatic acid.—Ch. and R.

ACIDUM ACETICUM.—For pharmaceutical purposes the ace-

* Dictionnaire Technologique, T. i. p. 106. Acide nitrique, par M. Payen.

tate of copper, as recommended in the French pharmacopœia, is to be preferred. The liquor which is first obtained is a little greenish, because it retains some copper, but it is to be rectified. The acid thus obtained is colourless; it indicates 10° on the areometer, or its specific gravity is 1.075; it exhales a most agreeable odour, which is found only in acetic acid obtained from acetate of copper, and is owing to a spirit called *pyro-acetic*, which moderates its pungency.

To make acetic acid *(vinaigre radical,)* commence by coating the bottom of a stone retort with a lute of fire clay, mixed with cows hair; when the retort thus coated is quite dry, fill it quite full with the crystals of the acetate in a dry state and slightly bruised; place it in a reverberatory furnace covered with its dome; then fit to it an adopter, and two or three balloons with opposite tubulatures; and lastly, a balloon with a lateral tubulature. The apparatus is finished by a Welter's tube with two branches; the shortest comes from the last balloon, and the other is plunged into a flask filled with distilled water; close the joinings exactly with fat lute and sized paper, and next day proceed with the distillation. The heat, which should be moderate at first, is to be progressively increased, until the drops succeed one another rapidly. The vapour which passes over is very hot, and in this case we should renew the water in the refrigeratories, and keep moistened cloths over the receivers; but commonly it is thought sufficient to renew the water little by little, without moistening the upper part of the receivers. It is always easy to regulate the operation well, if we attend to the emission of gas at the extremity of the apparatus; when the bubbles succeed one another too rapidly, the fire ought to be lessened.

The liquid which is first obtained is colourless. It is a very weak acid, derived in a great measure from the water of crystallization of the salt. About the middle of the operation, the extremity of the neck of the retort and the adopter become covered with lamellated or needle shaped crystals of a pale green colour, which are gradually carried over by the acid vapour and colour the product. According to M. Robiquet, it is nothing but an anhydrous acetate or super-acetate. At the end of the operation the vapour can scarcely be made to rise; then the fire is to be augmented to continue its disengagement; lastly, the operation is known to be terminated when the apparatus cools, and no more gas is disengaged.

The acid obtained contains a little copper; it may be rectified, in the same apparatus, by substituting a glass retort for that of stoneware, and placing this on a sand-bath. The rectification ought not to be carried to dryness, because the last portion contains a

certain quantity of empyreumatic oil, which would pass into the receiver and communicate a disagreeable odour to the product.

The acid thus got forms very nearly half of the weight of the acetate of copper used, and the residuum is only three-tenth parts; therefore, there is about a fifth part lost, arising from the portion of acid decomposed by the heat.

In this operation the oxide of copper readily yields its acid at a temperature so moderate, that the greater part of the acid does not undergo decomposition; but the oxide of copper being very easily reducible, its oxygen unites with the elements of a part of the acid, and thereby forms water which is mixed with the gaseous products, carbonic acid gas, carbonated hydrogen, and carbonic oxide, which are disengaged. There remains in the retort a portion of charcoal mixed with metallic copper. These two last are in such a state of division as to produce a pyrophoric residuum, and it therefore frequently happens that it catches fire the moment it is taken out of the retort, although cold.

This oxide may be employed in the composition of fire-works, or to recover the metal.

To prepare the *sel volatile de vinaigre* of the shops, small ground stoppered phials, mounted with a silver ring, are filled with granulated sulphate of potass; this salt is then impregnated with concentrated acetic acid, and some drops of a volatile oil, such as lavender, bergamot, or roses, are added.

Concentrated acetic acid still retains an eighth of its weight of water; its density is then 1.063 at 60° Fahr. Its greatest density is 1.079, according to Mollerat; * the water then forms a third. The areometer can only indicate this density by approximation; therefore, it is by its saturating power that it is estimated, that is to say, by the proportion of carbonate of soda that it can saturate. Now, the most concentrated acid is at 90° acidometer, that is to say, that it will saturate two and a-half times its weight of carbonate of soda. It crystallizes at 50° Fahr., and in plates of a regular form, which interlace one another like those of water beginning to freeze.—Ch. and R.

Acidum citricum.—It is principally from the fruit of the genus *Citrus* that this acid is extracted. The English, who by their commercial relations are more able than we (the French) to procure lemon juice in great abundance, manufacture this acid in quantity. The chemical essays † of Samuel Parke must be consulted for the detail of this manufacture. The lemon juice is brought from a great distance, and requires to be examined. Its specific gravity, when of a good quality, varies from 1.0312 to

* Annales de Chimie, T. lxviii. p. 88.

† Chemical Essays, 5 vols. 12mo. London, 1815. See Vol. iii. p. 1.

1.0625. It must be observed, in following the process of Scheele given in the Dispensatory, that the citrate of lime should be washed, and strongly agitated with warm water, and that these washings should be repeated until the water comes off perfectly clear. This is of the greatest importance to obtain a good product. Other precautions are still to be taken, such as to add the sulphuric acid by degrees, and to mix it well, otherwise portions of the citrate, by running immediately with the acid, will cake. This phenomenon is owing to the consolidation of the sulphate of lime.

The state of the solution may be ascertained by nitrate of barytes. The precipitate formed ought to be almost entirely soluble in pure diluted nitric acid, if the decomposition has been complete. In the contrary case, throw the whole mixture into a leaden boiler and heat it slightly; and if the precipitate formed by nitrate of barytes be still insoluble, (which proves that too much sulphuric acid has been employed,) add a little calcareous citrate, and let the whole react. When the just point of neutralization has been attained, after letting it deposit the sulphate of lime, filter and wash the residuum with cold water, to dissolve as little as possible of the sulphate of lime; then evaporate in pewter or lead basins, or stoneware pans, in a water-bath, until the surface of the liquor get covered with small crystals, which makes a pellicle covering the surface of the liquor. The acid obtained requires to be crystallized anew. From 160 pounds of lime juice of good quality, eighteen ounces of calcareous citrate are obtained, and from these ten ounces of white citric acid.

The crystals of citric acid are rhomboids, whose sides meet in angles of about 60 and 120°, and whose extremities are terminated by four trapezoidal faces, which embrace the solid angles.

Lemonade powder is made by mixing as exactly as possible 32 grammes of citric acid, and 1 kilog. of fine sugar passed through a tamis sieve. It is flavoured with volatile oil of lemons, of which an oleo-saccharum has been made before adding it to the other ingredients. It is to be kept in very dry and well-corked bottles.

According to Dr Thomson, chlorine converts gum into citric acid.

The berries of *airelle, (Vaccinium myrtillus,)* of the *Douce-amere, (Solanum dulcamara,)* and of the *Rosa canina,* contain citric acid.—Ch. and R.

Acidum succinicum, *Sel volatil de succin.*—Succinic acid exists completely formed in amber, according to Gehlen. It is united in it with a large quantity of oily matter. M. Chevreul has ascertained the same fact. MM. Collin and Robiquet * have

* Annales de Chimie et de Physique, T. iv. p. 326.

described all the phenomenon of its distillation. The process employed by Guyton de Morveau * for purifying this acid, consists in dissolving it in double its weight of nitric acid, and in evaporating the solution to dryness in a retort. The oil is decomposed; the succinic acid remains untouched; after this there is nothing to be done but to wash it with a little water, and then to dissolve it in boiling water, and crystallize it.

This acid crystallizes in quadrilateral white transparent prisms, unalterable by the air. 240 grammes of boiling alcohol dissolve 177 grammes of succinic acid; but in proportion as the solution cools it crystallizes anew. † Analyzed by Berzelius.

It has been attempted to show the identity of the succinic acid with the benzoic. ‡—Ch. and R.

Aqua potassæ.—The bicarbonate of soda and lime water would be preferable to the solution of caustic potass as lithontriptics. See the notes on bicarbonate of soda and quicklime.

Equal parts of quicklime and of potass appear sufficient (for preparing *Aq. potassæ.*)—Ch. and R.

Oleum tartari per deliquium, *Huile de tartar par defaillance.*—This liquor is a solution of impure subcarbonate of potass. It was formerly much used, and was considered as a cosmetic for cleaning and smoothing the face. § It was also looked upon as useful for facilitating the extraction of vegetable purgatives. It was added to tinctures in maceration or digestion. ‖ The Pharmacopœia of Wirtemburg points out a quick method of preparing it by dissolving one ounce (one pound, A. D.) of salt of tartar in four or five ounces of water and filtering it; ¶ but the resulting liquid has not the proper density.

If the oil of tartar be still used in medicine, it is as a cosmetic. In the arts it is employed in bookbinding. Five hectogrammes of this liquid potass, diluted with four kilogrammes of water, forms the *eau seconde* of copperplate printers, who use it to take off the ink, and clean the plates. It may be rendered more caustic by the addition of a certain quantity of lime.—Ch. and R.

The subcarbonate of potass on exposure even to a moist air does not entirely deliquesce, for it absorbs also carbonic acid, which converts part of it into bicarbonate, which is a permanent or rather an efflorescent salt.—(A. D.)

Aqua supercarbonatis potassæ.—The apparatus for the

* Annales de Chimie, xxix. p. 161.
† Inst. Chem. 12 de succino.
‡ Journal de Pharm. Vol. vii. p. 95.
§ Cordus Valerius; Dispensatorium cum scholiis Coudenbergii, p. 376.
‖ J. Beguinus, Tyrocinium Chemicum.
¶ Ph. Wirt. Folio. 1760. p. 202.

preparation of mineral waters, which is reckoned the best and the speediest, is that of Mr Bramah of London; * but it is also the most complicated. Its mechanism, and the manner of using, are described in the *Dictionnaire Technologique*, † as also the apparatus used in the central *pharmacie* of the civil hospitals of Paris. Long before 1810, M. Planche, the translator of Brugnatelli, ‡ had conceived the very ingenious idea of employing the machine called *Fontaine de compression* for the preparation of gaseous waters, and had pointed out to apothecaries an apparatus at once simple, commodious, and not expensive, which might serve the purposes of a common laboratory. We are also indebted to him for the best method of bottling the water.—Ch. and R.

Acetas potassæ.—M. Fremy § has ascertained the cause of the colour of acetate of potass. It is owing to the property which potass has of blackening the small quantity of vegetable matter which distilled vinegar always retains. Care must therefore be taken that during the whole of the operation for obtaining the acetate, there be always a little excess of acid; and if the alkali prevail, this colouring of the vegeto-animal matter will be considerable; but charcoal, and especially animal charcoal, answer well for depriving the salt of this colour. ‖—Ch. and R.

The difficulty formerly experienced in procuring perfectly white acetate of potass when distilled vinegar was used is now entirely removed, by employing the pyrolignic acid, which is absolutely devoid of vegetable matter.—(A. D.)

Tartras potassæ.—By filtration, a portion of the tartrate of lime which the cream of tartar contains is separated from it, and appears under the form of white flakes; but the greater part of it remains in solution, and is not separated. This by its weight very much impedes the crystallization. The Dispensatory recommends that the liquid should have a small excess of acid. According to Baumé, the crystallization of tartrate of potass takes place more easily when the liquor is alkaline.—Ch. and R.

Bicarbonas sodæ.—M. Robiquet, in a note read to the Royal Academy of Medicine, pointed out the advantages which would result from the use of this bicarbonate in the treatment of urinary calculus. This academician, reflecting upon the alkalescence which this salt communicates to urine, has conceived that by its use not

* Bulletin de la Société d'Encouragement, ann. xxi. Juillet 1822. Decrite par M. Hoyau.

† T. vii. p. 309.

‡ Pharmacopie Generale; par V. L. Brugnatelli, traduit par L. A. Planche. 8vo. Paris, 1811. See T. i. p. 250.

§ Bulletin de Pharmacie, T. i. p. 512; also T. ii. p. 572.

‖ See also a paper by M. Bernouilli, Bulletin de Pharmacie, T. i. p. 512; and one by M. Figuier, Vol. v. p. 407 of the same Bulletin.

only the increase of calculi of uric acid, which are the most frequent, might be stopped, but also their developement prevented, and that perhaps they might even be dissolved after they have been formed. He has related a case observed along with Dr Favrot, which supports this idea. There are, without doubt, urinary concretions on which the bicarbonate would be inactive, such as mulberry calculus, of which oxalate of lime forms the base; but these calculi are happily very rare, and if they are exceptions, it may be hoped that, with regard to the others, marked advantages will be derived from the new salt. *

It is thought right to insert here the formula of the *pastilles alkalines digestives*, of M. D'Arcet, † who first discovered, by numerous observations, the salutary influence of the bicarbonate of soda on the functions of the stomach. Take of bicarbonate of soda, dry and pure, 5 grammes; white sugar, 95 grammes; volat. oil of mint, 3 drops; mucil. of gum, *q. s.* Make them into pastilles of a gramme weight. As these pastilles attract the humidity of the air, they must be preserved in a dry place, and in a well stopped bottle. Each pastille of the weight of a gramme ought to contain nearly 0.05 gram. of bicarbonate. One or two of them suffice to re-establish a bad digestion; three are rarely required. This evil may be prevented by taking some beforehand.

The bicarbonate of soda is formed artificially by exposing carbonate of soda to an atmosphere of carbonic acid gas, and it then presents a solid irregular mass, which has some resemblance to the (native) African bicarbonate.

According to Wollaston, ‡ this salt exposed to a red heat loses exactly one half of its acid, and is converted into common carbonate.—Ch. and R.

PHOSPHAS SODÆ.—This salt is found in some animal liquids, particularly in human urine, in which it is united with the phosphate of soda, (phosphate of ammonia, A. D.) Some consider it as a neutral salt, others as a sub-phosphate. It is certain that the officinal phosphate of soda is alkaline. Dr Thomson has found in his experiments on this salt, that it contains more than 62 in 100 of water of crystallization, although, he says, probably this proportion does not extend to 63.

Phosphate of soda has a saline taste, but it is not disagreeable. It causes alvine evacuations in a dose of from 8 to 10 drachms; it is a mild cathartic, proper for women who have delicate nerves, for irritable persons, and when it is wished to spare the alimen-

* Journal de Pharmacie, T. xii. p. 124.
† Annales de Chimie et de Physique, T. xxxi. p. 58.
‡ Phil. Trans. 1808.

tary canal. In France its price need not be an obstacle to its use.—Ch. and R.

SULPHAS SODÆ.—A salt discovered by Glauber, and known for a long time by the name of that celebrated chemist. It may be obtained directly by saturating the sub-carbonate of soda with sulphuric acid diluted with water. Under the name of Epsom salts of Lorraine is sold (in France) the impure sulphate of soda derived from the mineral springs of that country. The salt thus obtained contains other neutral salts, such as the sulphate of magnesia, the muriate of lime, &c. &c. It may be purified.

The sulphate of soda exposed to a warm air loses its water of crystallization and its crystalline form; it is then found to be reduced to half its weight. This is the effloresced sulphate of soda. Six drachms of salt reduced to powder by its efflorescence, and passed through a sieve, twelve grains of nitrate of potass, and half a grain of tartar emetic, form the *sel de guindre*, this being the quantity for a pint of ptisane, or of *bouillon aux herbes.* *—Ch. and R.

SUBCARBONAS AMMONIÆ.—To eight parts of sal-ammoniac perfectly white and dry are added ten parts of chalk also well dried after being washed; the whole mixed is introduced either into a coated stone-ware retort or into a cast-iron apparatus, according to the quantity intended to be made. To the former vessel a leaden receiver is to be affixed, having a socket at its upper part, or an ordinary pot with a perforation in its bottom; this receiver ought to be plunged into a bucket of cold water. The apparatus must be luted very exactly; a moveable plug is to be fitted to the opening in the bottom, and the operation then proceeded with, by employing at first a very moderate heat. The plug placed at the extremity of the apparatus serves in some measure as a guide for the temperature which it is proper to use; if when this plug is taken out there is a sudden explosion of vapour from within, the fire must be slackened. In the contrary case the operation is going on well. In proportion as the decomposition advances the fire must be augmented, because the subcarbonate of ammonia is produced with greater difficulty. We know that the operation is near its close, when the vapours rise rapidly, and when from being cloudy they become transparent, which is owing to the great quantity of water then produced; lastly, the operation is terminated when the receiver cools entirely, although the heat may be sustained. On breaking the receiver, if it is of stoneware, the upper part is found covered with a very fine close-grained carbonate, translucid, white, and very dry, being nearly two inches

* Formul. magist. Cadet, 1823, page 268.

thick; that which is found wet and coloured requires to be rectified.* M. Gessard has proposed some modifications of the process.† Although the subcarbonate of ammonia is volatile at the temperature of boiling water, it may be obtained crystallized by cooling. It suffices, according to M. Robiquet, to saturate with it water by the heat of a water bath raised to from 140° to 175° Fahr., and to filter the solution, which deposits by cooling a great number of transparent granulated crystals without any definite shape. This is the English *sal volatile*.—Ch. and R.

It is the sublimed carbonate of ammonia which is the English *sal volatile*. Its purity surpasses that prepared on the Continent, so that M. Pelletier with great ingenuousness says, that he obtained it almost as beautiful as the English, by previously heating the muriate of ammonia to the verge of decomposition, and also the chalk, and using a series of balloons sufficiently extensive to contain the gaseous carbonate of ammonia, and not to condense it too suddenly. ‡

MM. Chevallier and Idt say that the proportion of carbonate of soda used in the process of the Dublin College to decompose the muriate of ammonia is too small, and that a portion of the ammonia is disengaged in a caustic state, which may be condensed in water. §—(A. D.)

Subcarbonas ammoniæ.—This salt is also much used as a reagent to detect certain substances. ‖ It has the property of dissolving some oxides, and from its great volatility it is easily expelled. It is consumed in great quantities to give pungency to snuff. It is also regarded as a powerful styptic when applied externally. —Ch. and R.

Aqua acetatis ammoniæ.—The acetate of ammonia formerly used was what was called *Spiritus Mindereri*, to make which the subcarbonate of ammonia derived from harts-horn, and which was still impregnated with animal oil, was employed. The liquor then contained a kind of ammoniacal soap, which is no longer found in the acetate of ammonia as now prepared. The compound acetate of ammonia was used as a very powerful internal aperitive and diaphoretic. Steinacher has published a process for this acetate. ¶

The common acetate of ammonia is composed, according to Wenzel, of acid, 62.45, and of base, 37.55; according to Richter, of acid, 68.77, and of base, 31.23. It is susceptible of crystalliza-

* Abridged from the Dictionnaire Technolog. Vol. iv. p. 173.

† Bulletin de Pharm. Vol. ii. p. 12.

‡ Ib. T. vi. p. 69.

§ Dictionnaire des Drogues, T. i. p. 566.

‖ Observations sur l'emploi comme reactifs du bi-carbonate de potasse, et du carbonate d'ammoniaque. Par M. Dulong. See Journal de Pharmacie, T. xi. p. 153.

¶ Journal de Physique, lxv. p. 32.

tion in pretty large prisms, by making ammoniacal gas pass into very concentrated radical vinegar.

M. Masuyer has proposed recently the acetate of ammonia as a means of dissipating drunkenness and also headachs, by putting twenty-five drops of it into a glass of sweetened water.—Ch. and R.

I have obtained acetate of ammonia very beautifully crystallized, by throwing into the same two necked receiver streams of gaseous ammonia and of acetic acid. The salt was permanent.—(A. D.)

SOLUTIO MURIATIS BARYTÆ.—The French Pharmacopœia prescribes, muriate of barytes, 10 parts; distilled water, 50. Dissolve the salt, filter and preserve the solution.

Goettling says that equal parts of muriate of soda and of charcoal are able to decompose a great quantity of sulphate of barytes. A mixture of one part of sea salt and two parts of muriate of lime is sufficient to decompose six parts of the sulphate of barytes. *—Ch. and R.

AQUA CALCIS.—M. Descroizilles observed that quicklime (burnt with wood? A. D.) retains from six to seven *per cent.* of potass, arising from the combustible used in its calcination, so that we must admit two kinds of lime-water; first, lime-water which, besides the lime, retains a small portion of potass; and secondly, lime-water prepared by pouring water on the residuum of the first solution. As potass is more soluble than the lime, the first lime-water possesses more energy, and M. Planche has proposed giving it the name of *eau de chaux potassé.* In the nomenclature proposed by M. Chereau, these two products of lime are designated as follows, *hydroole de chaux potassé*, and *hydroole de chaux.*

The author of the Dispensatory says that lime water cannot be regarded as a lithontriptic; but the experiments of M. Laugier establish the contrary. A stone may be disaggregated without being dissolved; it is sufficient to attack the mucus which forms its bond. Now lime-water is proper for dissolving this mucus. It is probable that for this purpose lime-water which retains potass is preferable.—Ch. and R.

On this subject it is proper to quote an observation made to me many years ago by the late Dr Murray. "It (lime-water) appears to have some powers as a lithontriptic, probably from its dissolving the mucus, which assists in cementing the particles composing the calculi." †—(A. D.)

AQUA CALCIS.—It appears necessary to revert to the action

* Nicholson's Journal, Vol. iv. p. 25.

† A System of Materia Medica and Pharmacy. By John Murray, M. D. Fifth edition, edited by his Son. 2 vols. 8vo. Edinb. 1828. See Vol. ii. p. 312.

of lime-water on urinary calculus. It is known that uric acid forms the basis of all calculi, although these concretions may also contain other substances. It is also known that this acid is little soluble, but it was not known that lime by saturating uric acid can augment its solubility, and that the urate of lime is more soluble than uric acid, until the publication of the fact by M. Laugier,* professor of chemistry at the *Jardin du Roi*. This appears from his experiments made in the first place on an arthritic concretion, which contained, besides other substances, urate of lime; and secondly, on an artificial urate of lime prepared by that learned chemist himself. Urate of lime is soluble in potass.

These facts explain the good effects which may be obtained from lime-water in these serious diseases. Robert Whytt, † and before him De Haen,‡ administered lime-water both inwardly and by injection. The patient was directed to take in the morning, fasting, three or four table-spoonfuls of lime-water in a glass of milk. The dose was repeated in the same manner in the evening. One or two hours before dinner, three or four pills of white soap of four grains each were swallowed. On going to bed, from two drachms to an ounce of syrup of white poppies were taken pure, or in a strong infusion of capillaire of Montpellier. This practice was continued a long time, gradually augmenting little by little the dose of soap and lime-water. In certain cases De Haen injected diluted lime-water into the bladder by means of a catheter. Incredible effects were obtained by this method by the professor of Vienna. M. de Sainte-Marie has confirmed these results in his own practice, at the same time that he has inserted this prescription in his formulary.§ He assures us that there is not known a more efficacious remedy against calculus, gravel, and the chronic vesical catarrh, with which old people are so much afflicted.

A drink against gravel is prepared with bruised linseed, capillaire of Montpellier, the ice plant (*Mesembryanthemum crystallinum*), of each a pinch. These are to be boiled for a quarter of an hour. To the filtered decoction a drachm of carbonate of soda is added. This quantity must be taken in twenty-four hours, by small glassfuls. It is to be sweetened with syrup of gum, or rather with syrup of tortoise.

The gaseous alkaline water or soda water is also very useful in these affections. Ch. and R.

* Journal de Chimie Medicale, T. i. p. 6. 1825.

† An essay on the virtues of Lime-water and Soap. 8vo. Edinb. 1761, originally published in Edinburgh Medical Essays, Vol. v. p. 2. 1743.—(A. D.)

‡ Rationis medendi, pars altera. Editio altera Vindob. 1770, p. 172. The first edition was published in 1760, and the Austrian professor states that in his practice he followed Dr Whytt, "Unde Doctiss. Whytt, M. D. et Prof. Edinb. sequutus."—(A. D.)

§ Nouveau Formulaire Medical et Pharmaceutique, by M. Etienne Sainte-Marie, M. D. &c. &c. Lyons, Feb. 1820, a commendable work in all respects.—Ch. and R.

The history of Mrs Stephens's remedy for stone in the bladder furnishes a good example of the fate of empirical remedies. While kept secret, it was extolled as infallible; but after its nature and composition was divulged, it soon fell into perhaps unmerited neglect. But it did not fail during the period of this transition, to attract the attention of scientific men, and to give rise to various inquiries, which terminated in a real acquisition of knowledge. The comparative strength of different lime-waters was the subject of a controversy between Dr Whytt and his colleague Dr Alston.* But this lady's practice is perhaps still more memorable from having engaged the attention of the celebrated natural philosopher, Stephen Hales, and the no less celebrated metaphysician David Hartley.†

Dr Rutty of Dublin also published a pamphlet on the subject,‡ in which he gives the following form for this medicine, divested of its superfluous quackery:—

"Let two scruples, two and a-half, or a drachm of egg-shells (calcined until they acquire a pungent fiery taste, and from being black, become white again, and afterwards exposed to a dry air for a month, six weeks, or two months, that is, till they slacken, or fall into an impalpable powder in great measure) be taken, three times every day, in three or four spoonfuls of water, small beer, wine, or wine and water; drinking after each dose the third part of the following decoction.

"Take two ounces, two and a-half, or three of Alicant soap; slice it thin, and dissolve it in a quantity of water sufficient to make a pint and a-half of the decoction. Strain it, and sweeten it with honey or sugar to the taste."—(A. D.)

MURIAS CALCIS.—The chloride of calcium is also obtained by the direct action of muriatic acid on carbonate of lime.—Ch. and R.

CHLORIDUM CALCIS.—There is also known a preparation of lime which in England is called *bleaching powder* or *Tennant's powder*, and in chemical writings is denominated bichloride of lime, oximuriate of lime, oxygenated muriate of lime, for which Mr Mackintosh of Glasgow gave the process in 1798.

* A Dissertation on Quick-lime and Lime-water, 2d Edit. 8vo. Edinb. 1754. A second Dissertation, 1755. A third Dissertation, 1757.

† An account of some experiments and observations on Mrs Stephens's medicines for dissolving the stone; wherein their dissolving power is inquired into and shown by Stephen Hales, D. D. F. R. S. Rector of Faringdon, &c. to which is added, a supplement to a pamphlet, entitled A View of the present evidence for and against Mrs Stephens's Medicines, &c. being a collection of some particulars relating to the discovery of these medicines, their publication, use, and efficacy, by David Hartley, M. A. F. R. S. Pp. 66. 8vo. London, 1740.

De Lithontriptico a Joanna Stephens nuper invento, Diss. Epist. Auct. Davide Hartley, Ed. 2nda. Pp. 125. Bathoniæ, 1746.

Ad virum clarissimum Ric. Mead, M. D. epistola, varias lithontripticum Joannæ Stephens exhibendi methodos indicans. Auct. Davide Hartley, A. M. Pp. 24. 8vo. Bathoniæ, 1751.

‡ An account of some new experiments and observations on Joanna Stephens's medicine for the stone, with some hints for reducing it from an empirical to a rational use. Pp. 56. 8vo. London, 1742.

The property it has of bleaching linen has given rise to considerable manufactories of it in France; and the use now made of it in the manufacture of paper, has greatly augmented its consumption. The preparation of it in quantity has been very elaborately described in the *Dictionnaire Technologique*, Art. *Chlorures*. M. Chevallier * has described the following apparatus: Slaked lime is introduced into a leaden cylinder, at one end of which is to be adapted a tubulature of the same metal, which receives a leaden tube for the introduction of the chlorine gas; the other extremity of the cylinder is closed by a lid, to which is affixed a tube whose lower extremity is plunged into lime-water, to transmit into it the excess of chlorine which is disengaged during the operation. For the production of the chlorine, an earthenware jar *(tourille,)* with two necks is employed, into one of which a tube is inserted, for the introduction of the sulphuric acid, and the other conducts the chlorine into the receiver. The sides of the cylinder must be constantly cooled. The following proportions answer:—dried sea salt reduced to powder, 500 grammes; black oxide of manganese, 125 grammes; sulphuric acid at 66°, 500 grammes; water, 250 grammes; or we may use muriatic acid, 220 grammes; oxide of manganese, 100 grammes. The value of this chloride is measured as to its discolouring power, by means of a solution of indigo. One part dissolved in 130 of water ought to discolour $4\frac{1}{2}$ parts of sulphate of indigo.

This substance is now better known (in France) under the name of *chlorure d'oxide de calcium*. M. Labarraque, who has applied it usefully in the disinfection of anatomical theatres, sick chambers, and all insalubrious places, adds, in imitation of Mr Tennant, a twentieth of its weight of muriate of soda (common sea salt) to the slaked lime.—Ch. and R.

The bleaching powder was the invention of Mr Tennant of Glasgow, who obtained a patent for it in 1799.† I have had the satisfaction of repeatedly witnessing in his extensive chemical works the whole process, which is conducted on the largest scale, and in the most perfect manner.

I do not find the description of the manufacture in the article *Chlorure* referred to; but there is some account of it in the article *Blanchiment* of the same work. ‡ Dr Ure of Glasgow has described the mode of preparation very minutely. §

M. Labarraque has written various papers on the power of the solution of chloride of lime, in destroying the offensive effluvia arising

* Journal de Chimie Med. T. ii. p. 173. April 1826.

† On the Composition and Manufacture of Chloride on Oxymuriate of Lime, by Andrew Ure, M. D. F. R. S. See Quarterly Journal of Science, Literature, and the Arts, Vol. xiii. p. 1. London, 1822.

‡ Dictionnaire Technologique, T. iii. p. 152.

§ A Dictionary of Chemistry, 3d Edition. 8vo. London, 1828. See p. 516.

from the putrefaction of animal substances, and neutralizing or decomposing various hurtful emanations. *

Of late the various chemical and medical journals abound with notices on the subject, of which a general account has been published by M. Alcock. † A solution of chloride of lime is manufactured at Manchester, and sold under the name of Fincham's purifying and disinfecting liquid. It requires to be diluted with forty waters to fit it for use.—(A. D.)

CHLORIDUM SODÆ, known in France under the name of *Liqueur disinfectante de M. Labarraque.*—It is prepared by the following process, in a common Woulfe's apparatus:—Take of subcarbonate of soda 5 parts, water 20 parts; put this solution into the receiver. On the other hand, introduce into the retort a mixture of muriate of soda 8 parts, and of manganese 5 parts, and pour by portions on this mixture 8 parts of sulphuric acid diluted with 6 of water. At first allow the operation to go on in the cold, then heat the matrass progressively, until the cessation of the disengagement of gas, (which is transmitted through the alkaline solution.)

This liquor is employed by those engaged in dissecting or embalming, and against gangrene, &c. &c.—Ch. and R.

CORNU USTUM.—M. Planche ‡ has proposed a modification of the ordinary process. "He places on the grate of a reverberatory furnace a layer of about two inches of wood charcoal, and fills the remainder of the furnace with horn, leaving convenient spaces between the pieces for the air to penetrate; the furnace is then covered with its dome, and this is terminated by an iron-pipe, which ought to discharge itself by its upper aperture into the chimney of the laboratory. The mouth of the fire-place and the other openings of the furnace are to be luted, the chimney tube alone remaining open. The charcoal is kindled through this opening, which is not long in communicating the inflammation to the horn. The operation, which goes on of itself, is finished when no more flame is perceived to issue from the pipe. After the furnace has cooled, and the hartshorn has been taken out, the whitest pieces are selected, which are made into troches. The blackened or bluish pieces are pulverized and placed in the apparatus for

* Art du Boyaudier. 8vo. Paris, 1822. See Journal de Pharmacie, T. ix. p. 63.
De l'emploi du chlorure de chaux e de sodium. 8vo. Paris, 1825.
Sur la preparation des chlorures désinfectans. See Journal de Chimie Medicale, T. ii. p. 165.

† An essay on the use of the Chlorurets of Oxide, of Soldium, and of Lime, as powerful disinfecting agents; and of the Chloruret of Oxide of Sodium, more especially as a remedy of considerable efficacy in the treatment of hospital gangrene, phagedenic, syphilitic, and ill-conditioned ulcers, mortification, and various other diseases. Pp. 152. 8vo. London, 1827.

‡ Bulletin de Pharmacie, T. vi. p. 372.

calcining magnesia, and heated to a red heat for about an hour. By this new operation the horn acquires the whiteness which is required.—Ch. and R.

Magnesia.—We are also indebted to M. Planche for the following process for the calcination of magnesia. *

It consists in substituting for common crucibles a series of *camions;* (these are smooth unglazed pots used by ship painters.) the upper rim of each pot is to be ground with sand, and in the bottoms of all, except one, a very large circular hole is to be made by means of a well tempered punch. Then invert upon the pot of which the bottom is entire another pot with a hole, so that the rims entirely correspond. Place thus four bottomless pots one upon the other, lute the joinings with a mixture of cow's hair, fire-clay, and water. This new kind of crucible is next filled with subcarbonate of magnesia in light powder obtained by friction, and care must be taken not to compress it. The upper pot is closed by a stopple of baked clay pierced with a hole for allowing the escape of the water, air, and carbonic acid. In order that the whole apparatus be firmly joined, the first pot is surrounded with a ring of iron-wire, to which are attached at equal distances four wires of the same metal. These unite in a cross at the top of the apparatus. The whole thus disposed and surrounded with charcoal is heated for three hours and then allowed to cool. To be certain that the calcination is complete, test the magnesia by muriatic acid, which should dissolve it without effervescence; but it is necessary to know, that, when trial is made of well calcined magnesia by plunging it into the acid, there is a kind of crackling sound produced which must not be confounded with effervescence. The magnesia, still warm, must then be inclosed in a ground stoppered bottle.

The magnesia loses by this operation about two-thirds of its weight. When a small quantity only of magnesia is to be calcined, one *camion* may suffice, which contains, however, twelve ounces of magnesia. Some pots contain a pound. To this vessel a cover pierced with a small hole is adapted and luted; and indeed there may be this inconvenience in calcining a very large quantity of magnesia at a time, as in the above described apparatus, that the heat cannot be uniform to so great a height, and some portions always escape calcination.—Ch. and R.

On the Continent great levity is reckoned one of the properties desired in calcined magnesia,† and yet Henry's magnesia, which is the most esteemed in the country, is at least four times heavier than that obtained by the common process. It has been supposed by Pelletier

* Bulletin de Pharmacie, T. iii. p. 511.
† Dictionnaire des Drogues, T. iii. p. 394.

that Henry's article was prepared by a particular mode of precipitation and manipulation. * In a meeting of the Pharmaceutical Section of the Academy of Medicine, M. Robinet † mentioned some experiments on the calcination of magnesia. A crucible capable of containing three litres of water, holds scarcely twelve ounces of white carbonate of magnesia. To economize space, he conceived the idea of moistening the magnesia, and compressing it strongly in a linen cloth so as to form a cake of less bulk. He calcined in this way thirty ounces of magnesia, and in an hour and a-half got twelve ounces of caustic magnesia, pretty dense. He then passed it through a tamis cloth, and thus got an impalpable powder. M. Robiquet mentioned that he had formerly indicated this process, but that it does not yield a caustic magnesia so light as that prepared in England.

The more strongly magnesia is heated the heavier it becomes, and the less readily soluble in acids.—(A. D.)

Sulphuretum antimonii præcipitatum.—M. Robiquet ‡ has observed that pure kermes calcined in a close vessel yields water, sulphureous gas, and sulphuret of antimony, mixed with oxide. He considered the kermes as a sub-hydrosulphuret. More recently, M. Berzelius § has established that it is only a hydrate of the sulphuret, that the oxide of antimony was only accidentally present, and that it might be removed by washing.

It is not a sulphuretted oxide which remains after the calcination of kermes, but rather a sulphuret of antimony mixed with oxide of antimony.—Ch. and R.

Sulphur auratum antimonii.—According to the French pharmacopœia, the golden sulphuret, or hydrated sulphuret of antimony with excess of sulphur, is obtained from the alkaline liquor, which has been used in the preparation of kermes. Take any quantity of this liquor, drop into it acetic acid, until it reddens tournesol paper; a precipitate of a golden yellow colour falls; collect this on a filter, and wash it until the water has no longer any taste. Place the filter in a press between some folds of paper, and allow it to drain; lastly, dry the precipitate in a stove at a heat of 90° F. The bottles in which this preparation is preserved ought to be protected from the light.

According to Berzelius, the golden sulphuret acted upon by muriatic acid emits sulphuretted hydrogen gas, and forms protomuriate of antimony, and there is also a deposit of sulphur. The golden sulphuret may be obtained by mixing a solution of antimonite of potass with a hydrosulphuretted alkaline solution, and

* Journal de Pharmacie, T. xiii. p. 388.
† Ibid. T. xiii. p. 387.
‡ Annales de Chimie, lxxxi. p. 317.
§ Annales de Chimie et de Physique, T. xx. p. 225.

adding an acid to the mixture. Hence, M. Berzelius * concludes that the golden sulphur ought to be regarded as a very much divided sulphuret, corresponding to the deutoxide or antimonious acid, and composed of 49.6 of sulphur, and of 100 of antimony.

The production of golden sulphuret, according to the same chemist, depends upon this, that by the contact of the air the hydrosulphuret passes more or less to the state of sulphuretted hydrosulphuret, and the sulphur arising from the decomposed sulphuretted hydrogen is united to the kermes at the moment of its precipitation.—Ch. and R.

From a very elaborate analysis of the combinations of antimony with sulphur, Buchner † has drawn the following conclusions:—

1. Sulphuret of antimony in powder is not sensibly affected by a boiling solution of cream of tartar. When, however, sulphuret of antimony in powder has been long exposed to the air, a little sulphite of antimony is formed, which is dissolved by cream of tartar.
2. When sulphuret of antimony in powder is boiled in caustic ley, a portion of water is decomposed, its oxygen oxidates one portion of antimony, and its hydrogen forms with one portion of sulphur, sulphuretted hydrogen, the *hydro-sulphuric acid* of the French, or the *hydrothionic acid* of Buchner, which last appears to me a preferable name, as being free from ambiguity. On cooling *kermes minerale* falls, which consists of one proportional of the protoxide of antimony, two proportionals of the sulphuret of antimony, and one proportional of water. In the alkaline solution, sulphuret of antimony remains dissolved by the agency of the hydrothionic acid.

The same changes take place when a *hepar antimonii* is prepared by melting together two parts of sulphuret of antimony and one part of carbonate of soda.

3. By the addition of a stronger acid to this solution, the hydrothionic acid is separated, and the sulphuret of antimony falls in the state of a hydrate, which, when decomposed by heat, is analyzed into ten *per cent.* of water, and ninety *per cent.* of sulphuret of antimony. When a little sulphurous and hydrothionic acids appear, it is owing to the accidental decomposition of a little of the water.
4. Kermes has the properties of a combination of two parts of sulphuret of antimony, one of protoxide of antimony, and four parts of water, of which three are hygroscopic, and one chemically united. The three former are driven off by a heat which causes no decomposition, and the latter single part requires a red heat.
5. Kermes which has been heated to redness has a reddish-gray colour, and is more difficultly fusible than sulphuret of antimony. A solution of cream of tartar takes up from it one part of protoxide of antimony, and leaves two parts of gray sulphuret of antimony.
6. Kermes may be considered as a stibiothionate of antimony in the state of a hydrate. According to Buchner, in the stibiothionic acid

* Annales de Chimie et de Physique, Vol. xx. p. 225.
† Repertorium fur die Pharmacie, Bd. xiii. p. 169. 1822.

sulphur is acidified by antimony, as it is by hydrogen in the hydrothionic acid, or by oxygen in the sulphuric acid.

7. *Crocus antimonii*, and also the *Vitrum antimonii*, are stibiothionates of antimony with excess of base. The stibiothionates are to be classed with those salts with oxidiferous bases, whose acids contain no oxygen.
8. The oxidation of a part of the antimony in the formation of kermes, does not take place by means of the oxygen of the air, but by the decomposition of the water; for the precipitation of kermes by cooling takes place in air-tight vessels.
9. The common officinal kermes, as well as the *sulphur auratum antimonii*, is apt to be contaminated by sulphuret of arsenic. By heating to redness in a retort, or by detonating it with nitre, the arsenic may be easily detected.
10. *Sulphur auratum antimonii* is hydrated sulphuret of antimony, with excess of sulphur.
11. The proportion of excessive sulphur is various, according to the mode of preparation, and appears partly as *lac sulphuris* intimately mixed with the kermes.
12. When *sulphur auratum* is heated a little above 212° Fahr. there escapes only water, and the residuum is a gray powder which melts at a red heat, and gives out another proportional of water. Commonly a little sulphurous acid and hydrothionic acid are formed.
13. As neither sulphuret of antimony nor its hydrate are decomposed by cream of tartar, this salt furnishes a convenient test by which we may discover the presence of any uncombined oxide of antimony.
14. When *sulphur auratum* or *kermes* are treated with boiling water, there is a partial decomposition, and sulphurous and hydrothionic acids are formed. Hence these preparations should be washed with cold water.
15. The hydrate of sulphuret of antimony retains its water so strongly, that it does not lose its colour when exposed in a close vessel over strong sulphuric acid. Only at a temperature above 212°, it loses its hygroscopic water, without undergoing any other change than change of colour.
16. The hypothesis that kermes and *sulphur auratum* are oxides of antimony combined with hydrothionic acid, is not supported by analogy of the habitudes of hydrothionic acid with metallic solutions, nor by the properties of hydrothionic acid and its salts, nor by the chemical relations of their preparations.
17. The precipitate formed by hydrothionic acid, in a solution of an antimonial salt, *e. g.* tartar emetic, differs from kermes in containing no oxide of antimony, and is a mere hydrate of sulphuret of antimony.

The combinations of antimony with sulphur have been examined also by Berthier* and by Rose,† and previously by Vogel ‡ and Do-

* Annales de Chimie et de Physique, T. xxv. p. 379.
† Ib. T. xxix. p. 241.
‡ Schweigger's und Meinecke's Jahrbuch der Chemie und Physik, iii. p. 306.

bereiner.* But after the labours of so many distinguished chemists, the subject is so complicated as to be still involved in some doubt. On some parts of the continent, very erroneous ideas are entertained of the activity of mineral kermes. In their posological tables, the dose is fixed at one-fourth to half a grain several times a day, and the Faculty of Edinburgh were actually consulted by an Italian physician, who had been arraigned for improper practice in prescribing this substance to a pregnant female. The grounds of charge appear so singular, according to our notions, that I may be excused for quoting a part of the consultation: "Mulier quædam septimo et vigesimo ætatis suæ anno, viribus pollens, pluriumque filiorum mater, quarto instante prægnationis mense, quum humido frigidoque aëri se exposuisset, catarrho fuit correpta, non levi accedente tussi, qua somnus ei distinebatur. Ægrotanti *quartam grani partem* Chermes mineralis, cum decem sacchari granis præscripsi; atque matutinis horis quaque die hoc remedio uteretur præcepi. Optimum enim auspicium faciebat, me et pluries et ipso prægnationis suæ tempore, felici semper exitu idem factitasse. Interim quum ejus vir ab alio medicæ artis professore postulasset, utrum prægnanti uxori Chermes minerale a me præscriptum possit nocere: hic nullo animi hæsitatione, hocce remedio mulierem prægnantem statim abortare posse, respondit." Induced by the freedom with which tartar emetic and antimonial powder have been lately employed, I tried to ascertain the effects of mineral kermes in large doses, and found that even ten grains given three times a-day, would often produce no appreciable effect. On other occasions these large doses induced nausea and diaphoresis.—(A. D.)

Murias antimonii.—M. Thenard † says that a very fine chloride of antimony may be obtained by making a stream of chlorine pass along pieces of antimony duly heated; the chloride is directly formed, and is collected with the greatest facility.

M. Robiquet has published ‡ a process for preparing this chloride; according to which the powdered antimony is treated by five times its weight of *Aqua regia*, made with one part of nitric acid at 32°, and four parts of muriatic acid at 22°. The solution is distilled in a retort, and the product is collected in a fresh receiver, after it has attained an oleaginous consistency; these proportions produce one part and a-half of chloride. It must be observed, however, that the operation requires much attention. It may happen that the nitro-muriatic acid acts slowly, and the chloride is sublimed with difficulty. In this case, the solution contains an excess of chlorine. Or the action may be too quick; it grows turbid as it evaporates, and a great deposit is formed, which occasions concussions during the distillation. (In this case there is an excess of nitric acid.) The author of the process points out the

* Beiträge zur chemischen Proportionslehre. Jena, 1816.
† Traité de Chimie, 5me edit. T. iii. p. 361.
‡ Annales de Chimie et de Physique, Vol. iv. p. 165.

means of correcting these inconveniences. In the first case, the solution is to be concentrated, to be put into a flask shaken with some powdered antimony, and decanted off some time afterwards. In the second case, the same means are to be used, except that a certain quantity of muriatic acid is to be added previously.

There is yet a third process, which also furnishes, according to M. Thenard, a fine antimonial chloride. *—Ch. and R.

PULVIS ANTIMONIALIS.—James's powder, *Pulvérolé de phosphate de chaux et d'antimoine.* The French Pharmacopœia recommends equal parts of sulphuret of antimony and hartshorn. —Ch. and R.

TARTRAS ANTIMONII ET POTASSÆ.—M. Henry, chief of the Central Pharmacy of the civil hospitals of Paris, read to the Royal Academy of Medicine some new and interesting observations on the various processes in use for the preparation of tartar emetic.

The processes forming the principal subject of his paper are those of the Pharmacopœias of Edinburgh, London, and Dublin, inserted in this Dispensatory, also that proposed by Mr Phillips; and lastly, the method directed by the new French Pharmacopœia.

Process of Edinburgh.—125 grammes of sulphuret of antimony, the same quantity of nitrate of potass, and 50 grammes of bitartrate of potass, (cream of tartar,) by *deflagration* produced 50 grammes of tartar emetic; and by *inflammation*, the same quantities gave 53 (in another place it is said 60, A. D.) of tartar emetic.

Process of London.—125 grammes each of sulphuret of antimony, bitartrate of potass, and sulphuric acid, 64 of nitrate of potass, and distilled water 3.000, produced 168 of tartar emetic.

Process of the French Codex.—Glass of antimony, 125; bitartrate of potass, 185; water, 1.500, produced 195.

Process of Mr Phillips.—Supersulphate of antimony, 230; bitartrate of potass, 276; water. 3.000, produced 210.

Dublin process.—Sulphuret of antimony and bitartrate of potass, of each 125 grammes; muriatic acid, 690; nitric acid, 8; distilled water, 1.125, gave 147 grammes of tartar emetic.

M. Henry, after having discussed the merits and demerits of each of these processes, gives the preference to the process of the Dublin Pharmacopœia, as being the preparation most to be relied upon, and capable of furnishing a product always pure, besides, that by the first operation very white crystals are obtained; but he has thought it advantageous to increase the proportion of bitartrate of potass, and to introduce some modifications which his experiments have led him to think useful.

* Traité de Chimie, Vol. iii. p. 361.

Dublin process modified.—This process is performed by two operations.

First, the preparation of powder of Algaroth.

Take of sulphuret of antimony, 1250 grammes or parts; muriatic acid at 22° B. (sp. gr. 1200) 6900; nitric acid, 80. Introduce the sulphuret of antimony in fine powder into a glass matrass capable of containing once and a-half the volume of the materials. After having mixed thoroughly the nitric and muriatic acids, pour in 1000 or 2000 of the mixture, so as to moisten every part of the sulphuret; afterwards add the remainder of the acids, and place the matrass on a sand-bath; bring the contents to ebullition by a well graduated fire. To guard against the inconvenient or dangerous vapours which are exhaled at the moment the powder and acids come into contact, there should be annexed to the neck of the matrass a cork with two holes; the one for receiving a glass funnel, of which the inner orifice is opened or shut at pleasure by means of a rod covered with linen, and closing the throat, and the other for a tube with two angles, destined for the escape of the gas evolved which is to be kindled. In the apparatus thus arranged, continue the boiling until the gas evolved have for some time lost the property of blackening acetate of lead; then allow the mixture to cool and stand till it become clear; decant off the supernatant solution, and wash the yellowish gray residuum with a little muriatic acid, to obtain the solution imbibed by it, and add it to the decanted liquors. This solution furnishes subchloride *(oxichlorure)* of antimony, *(Pulvis Algarothi.)* For this purpose pour the liquid into a large quantity of water, and agitate it so that the powder which is produced may be speedily separated, and that the washing be effectually performed. It is known that enough of water has been employed, when, after the decomposition of the liquid muriate of antimony, the liquor is no longer rendered turbid by pouring it into a large quantity of fresh water. After precipitating from it the largest possible quantity of the *Pulvis Algarothi*, wash this with a great deal of water, until it no longer show any trace of acidity by the test of tournesol; collect this precipitate on a linen filter; allow it to drain for twenty-four hours, to free it from some part of the water. The quantity of dry precipitate it contains in this moist state is estimated by drying a small quantity of it in a porcelain capsule, and weighing it after drying. The difference of weight indicates the loss sustained, and it is thus not difficult to know how much of the moist mass corresponds with the dried powder. Thus, with the quantities mentioned, there were 1.330 parts of moist paste; and 20 parts having lost 4.58 by drying, it is clear that 1330 of moist precipitate corresponded with 1025 of dried powder,

designated in this Dispensatory under the name of nitro-muriate of antimony of the Dublin Pharmacopœia.

Second part of the process. Preparation of the Tartar Emetic.—M. Henry having ascertained, as already stated before, that the proportion of bitartrate of antimony may be augmented to 145 of cream of tartar for 100 of the *Pulvis Algarothi*, which gives for 1025 of the latter 1486 of bitartrate of potass. Next boil in an iron kettle 10,000 of pure water, then, after having minutely mixed the *Pulvis Algarothi* and the cream of tartar, add them to the boiling water; stir the mixture well, and evaporate it quickly to 25° B. (1210 sp. gr.;) filter it, and leave it to crystallize. After evaporating the mother water, which must be saturated with chalk, on account of superabundant acid, and after purifying the coloured salt which it affords, the total product (in the example quoted) was 1826 grammes or parts.

Theory.—It is not necessary to attend to the muriates of zinc, iron, and lead, formed at the same time with that of the antimony, by the action of the acids on the commercial sulphuret of antimony, which is always more or less impure; for these three muriates remain dissolved in the water by which the muriate of antimony is decomposed.

The subchloride or oxichlorure (nitro-muriate of antimony) being obtained and well washed, when brought in contact with water and cream of tartar, gives rise to protoxide of antimony, which unites with the bitartrate of potass, while the chlorine is converted into muriatic acid. This acid acts upon a part of the cream of tartar, and forms with muriate of potass two free acids, tartaric and muriatic. The other bodies, such as lime and iron, derived accidentally from the vessels, or from the commercial cream of tartar, are in small quantity only, and furnish tartrate of lime, tartrate of iron, and muriate of lime.

Purity of the Tartar Emetic.—M. Henry dissolves one part of tartar emetic in fourteen parts of distilled water. If the salt be mixed with insoluble substances, they remain at the bottom of the vessel. If the emetic be pure, it ought to be dissolved entirely, and should not crystallize at twelve degrees of temperature, 60° F. It ought not to be precipitated by muriate of barytes, neutral oxalate of ammonia, acidulous nitrate of silver, or acetate of lead suitably acidulated. This last reagent detects in tartar emetic even $\frac{1}{120}$th of cream of tartar, only time must be given that the precipitation may take place. This reagent is prepared by dissolving eight parts of crystallized acetate of lead in thirty-two parts of distilled water warmed; replace that which has evaporated, and filter it, to separate a little carbonate of lead; add then to the liquid fifteen parts of acetic acid at 9°, specific gravity 1070; or, what comes to the same thing, take eight parts of solution of the

acetate, and add three parts of acetic acid, specific gravity 1070.* —Ch. and R.

The whole of M. Henry's investigation is highly interesting, and deserves to be carefully perused. In regard to cheapness, the processes examined stand in the following order: Parisian, London, Mr Phillips, Dublin and Edinburgh; but in regard to facility of preparation, that of Dublin is preferable to all the others. To the process of Mr Phillips he objects especially that the quantity of subsulphate on which we operate is unknown, and that the product seemed to contain bitartrate of potass in great quantity. The Parisian process requires a long manipulation to get crystals, while, according to M. Henry, the Edinburgh processes cannot come into competition.—(A. D.)

Argenti nitras fusum.—The mould for casting nitrate of silver is called in France *Lingotiére*. It is commonly made of steel, and sometimes of copper; its sides are covered with a little oil, that the nitrate may not adhere to it.—Ch. and R.

Oxidum ferri nigrum.—The name of black oxide of iron does not seem to suit these preparations, (purified scales of iron.) Three kinds of oxide of iron are in use (in France;) 1*st*, the black oxide of iron prepared by means of water or by acetic acid; 2*d*, the brown oxide of iron; and, 3*d*, the red oxide of iron.

Black oxide of iron, *Oxide de fer hydraté*, by water, is now prepared, according to M. Guibourt's process, which has been adopted by the Central Pharmacy of the Parisian hospitals. It is described in the new French Pharmacopœia, as well as the process by acetic acid. Cavezzali,† at a different period, also gave another process for making *Æthiops martialis*, by water alone. In the same Journal ‡ is found the process of Fabbroni, who adds a little nitric acid to accelerate the oxidation.—Ch. and R.

The French criticism is correct. The scales of iron are far from being a perfect oxide, and when acted upon in the stomach by its juices, give rise to the evolution of hydrogen gas and unpleasant nidorous eructations. On the other hand, the perfect black oxide is free from this inconvenience, is more active than the peroxide, and milder than the sulphate. It is therefore well deserving of being more generally used in this country.

In the French Codex, there are no fewer than three methods of preparing the black oxide of iron.

Oxidum ferri nigrum aqua paratum *vulgo* Æthiops martialis.

Take of prepared filings of iron any quantity. Put them into a wide open glass or earthenware vessel. Pour upon them common water pu-

* Journal de Pharmacie, T. xii. p. 63; and Journal de Chimie Medicale, T. i. p. 521, and T. ii. p. 1.

† Annales de Chimie, T. xliii. p. 94.

‡ T. xxx. p. 220.

rified by filtration as much as will cover them six inches deep. Shake the vessel daily several times, and keep it always covered to prevent the access of the air. If necessary, add more water, to keep it always at the same level above the iron filings. Without attending to these precautions, the iron is apt to run into masses, which cannot be easily triturated, and the process fails. In the course of some weeks the water is rendered turbid by a very fine black powder, which is to be collected carefully on a paper filter, and dried quickly in the cucurbit of an alembic covered with its capital.

N. B.—This oxide may be prepared much more expeditiously and easily by means of a machine contrived to keep the iron filings in constant motion under water.

Oxidum ferri nigrum *juxta methodum* D. Guibourt, *in magna nosocomiorum pharmacopœia usitatam.*

Take of filings of iron any quantity; triturate them in a mortar, then put them in a wide vessel of porcelain, and pour upon them water until it come off perfectly clear. Compress the filings, and incline the vessel, and let them drop for some minutes. Replace the vessel in its horizontal position; stir the filings with an iron spathula, and add as much water as will moisten them. In the course of four or five days wash off the oxide, let it subside, and collect it on a filter. Lastly, dry it in a furnace after compressing it.

N. B.—It is necessary to take care that the filings be always kept mixed with the same quantity of water, so that they neither cease to be moist, nor allow water to flow off when the vessel is inclined. If this be attended to, in a short time there will be an evolution of sulphuretted hydrogen, recognizable by its odour; and during the first day the mass will heat, in consequence of the combination of the oxygen with the iron, to 86° Fahr., next day to 97° Fahr., and on the third nearly to 122° Fahr., above which it will not rise. To maintain this temperature, the mass must be frequently stirred, and care taken that it be neither too little nor too much moistened, otherwise the process will go on unequally. In the course of five days great part of the iron is converted into oxide, and the heat falls. Then the mass is to be elutriated to remove the oxide. The residuary iron may be treated in the same manner, will again heat, and may be elutriated after the same number of days. In this manner a great quantity of black oxide of iron may be prepared in a few days, which is the better that it is done with iron and water only. In a note affixed to Ratier's translation, * it is stated, that, besides the hydrogen gas, which is produced when water is decomposed, there is evolved a little ammonia, and perhaps some protoxide of azote, showing that the air acts during this oxidation.

Oxidum ferri nigrum, *vulgo* Æthiops martialis, acidi acetici ope paratum.

Take of very pure sulphate of iron, 500 parts; distilled water, 4000; dissolve the sulphate in the water, filter the solution, and add to it in portions subcarbonate of soda, 500 parts dissolved in 4000 of dis-

* Pharmacopée Française, nouvelle traduction par F. S. Ratier; augmentée des notes et additions par O. Henry, fils. Pp. 556. 8vo. Paris, 1827.

tilled water; wash the precipitate thoroughly, and dry it slowly; pour upon weak acetic acid (distilled vinegar) in the proportion of three to eight of the precipitate; introduce the whole into a coated earthenware retort, and distil in a reverberatory furnace; after it has cooled, take the oxide out of the retort and keep it for medical purposes. In the translation it is added, that this deutoxide is often mixed with a little charcoal, and, in fact, it is the presence of the charcoal which prevents the iron from passing to a higher state of oxidation. M. Vauquelin has recommended a process which cannot, however, always yield a very uniform product on the great scale. It consists in calcining strongly together a very intimate mixture of two parts of filings of iron with one of its red oxide. The black residuum is powdered. When the mixture of the peroxide and filings have been made with very great care, the division of the oxygen of the peroxide with the iron should take place more readily.—(A. D.)

Murias ammoniæ et ferri. *Fleurs de sel ammoniac martial.*—The French pharmacopœia prescribes 360 parts of muriate of ammonia, with 120 of muriate of iron, that is to say, three parts to one; and as it happens that in sublimation by the application of fire, these two salts do not always rise equally, and the mixture may vary in the relative proportions of the ingredients, evaporation of a mixed solution of the salts to dryness is recommended.—Ch. and R.

Vinum ferri.—In the preparation of this wine, the iron decomposes a little water, and disengages hydrogen gas during its oxidation. Otherwise, this preparation is uncertain, inasmuch as the quantity of iron in solution cannot be estimated, since it depends on the degree of acidity of the wine. Parmentier recommends taking liquid tartrate of potass and iron, but this tartarized wine differs much from the wine prepared by the ordinary process. It would perhaps be better to specify a wine abounding with tartaric acid, and of this description is the Rhenish white wine, prescribed also by the Swedish pharmacopœia.—Ch. and R.

In the first edition of the Dublin pharmacopœia of 1809, chalybeate wine was directed to be made with Rhenish white wine, as here recommended, but in the edition of 1826, it is altogether omitted, according to the fashion of the day, which rejects the use of wine as a menstruum.—(A. D.)

Acetas hydrargyri, *terre foliée mercurielle.*—The new Codex employs the proto-nitrate of mercury itself, which is dissolved in distilled water, and into this solution a solution of acetate of potass is poured, until no more precipitate is formed; the precipitate is then washed and dried; but Mr Phillips is right in con-

sidering the acetate of soda to be preferable, as it can be obtained purer by crystallization, and freer from (excess of) alkali.

The acetate of mercury crystallizes in thin pearly spangles, and resembles boracic acid. It is insoluble in alcohol, is blackened by alkaline liquors. It does not act on tournesol. Combustible vapours alter it easily. Sugar and manna have the property of decomposing it, according to Vogel.—Ch. and R.

In the Parisian pharmacopœia there is a formula for preparing the *protonitras hydrargyri*. Take of purified mercury one part, of nitric acid sp. gr. 1239, two parts; dissolve by a moderate heat the greater part of the mercury in the acid, evaporate the solution, and set it aside to form white crystals.—(A. D.)

ACETAS HYDRARGYRI.—M. Garot has examined the acetates of mercury, and he has very readily, and with extreme kindness, sent us the following analysis of the paper which he has presented to the pharmaceutical section of the Royal Academy of Medicine.*

" There exists, (which has been known for a long time,) two very distinct acetates of mercury, both crystallizing perfectly, in one of which the mercury is in the state of proto-acetate, and in the other in the state of deuto-acetate.

" For preparing the proto-acetate there are two methods; the first consists in pouring the solution of a soluble acetate into a solution of a mercurial salt, in a state of protoxide. This is the process most generally followed. Care must be taken to be certain of the state of oxidation of the mercurial salt, because the deutoxide which may be present will be entirely lost, since the deuto-acetate is completely soluble.

For obtaining a precipitate always identical, and of which the quantities may be constant, the following is the process to which M. Garot has come. Take of crystallized proto-nitrate of mercury 7 parts; distilled water 60 parts; nitric acid 1 part; crystallized acetate of soda 5 parts. Dissolve the proto-nitrate in the 60 parts of water, acidulated with the prescribed quantity of acid. Next, dissolve the acetate of soda in the same quantity of water, and mix the two solutions. In this manner the state of the mercurial solution is always the same, and the acetate of soda, which crystallizes perfectly, and of which, consequently, the composition may be known, is preferable to the acetate of potash or of lime, which, attracting the moisture from the air, do not crystallize, and are not always very equal in their composition.

" The other process consists in treating the hydrate of protoxide of mercury, (obtained by decomposing by caustic soda nitrate of protoxide of mercury free from deuto-nitrate,) by boiling acetic acid at 4° of density, sp. gr. 1.0286. On coming into con-

* M. Garot's paper has been published, Journal de Pharmacie, T. xii. p. 453.

tact, even when cold, the action manifests itself, for there appear on the surface of the liquid micaceous spangles sullied by the gray colour of the precipitate. On the application of heat, these plates disappear, (the oxide is dissolved,) and by filtration and cooling the acetate crystallizes. When the quantity of acid has been sufficient, almost the whole of the oxide is dissolved, with the exception of a small quantity of black powder, which rubbed when it is dry exhibits globules of mercury. It is nothing but mercury very much divided, arising, as it would appear, from the disoxygenation of a portion of the oxide, at the expence of the carbon and hydrogen of the acetic acid.

" By the one or the other of these processes, two acetates are obtained, completely identical in their composition, but different in their appearance; the one, that by precipitation, occurs under the form of small micaceous plates collected into masses, whilst the other, that by crystallization, is under the form of beautiful silvery plates.

" The characters of this acetate are well known. It is that which is employed in medicine, and probably that with which Keyser prepared his troches. * It is precipitated black by potass, soda, and ammonia. The mode of its reaction with water deserves notice. At the ordinary temperature there is little action, and it is very sparingly soluble; one part requires 333 parts of water to dissolve it, but by the action of caloric its solubility is considerably augmented, so that by cooling a great quantity of crystals is obtained. A very singular phenomenon takes place at the same time: There remains after the action of the water a black residuum consisting of mercury, and the mother water has become acid, and contains some deuto-acetate, from whence it may be concluded, that the proto-acetate of mercury when boiled with water divides into two parts; one portion, which is the most considerable, is dissolved and crystallizes on cooling; the other, on the contrary, is decomposed, the protoxide of mercury abandons part of its mercury, which forms the black insoluble deposit, and hence result deuto-acetate and free acid. This effect does not take place unless when the salt which has been employed is neutral. If acid has been added to the liquor, neither precipitate nor deuto-acetate is formed.

" The proto-acetate has been analyzed by treating this salt with a saturated solution of chlorine, so as to make the protoxide of mercury pass into the state of deutoxide; then heating it to disengage the excess of chlorine, and transmitting through the solution a stream of sulphuretted hydrogen. M. Garot thus converted the mercury into the deuto-sulphuret, of which the composition is well known. The quantity of mercury being ascertained, it was

* M. Garot is deceived in this respect, and M. Robiquet could furnish him with proofs to the contrary.

easy to calculate from it that of the oxygen, and consequently that of the acid. " The mean of several experiments was:—Of protoxide of mercury, 79.76; of acetic acid, 20.24 = 100." *

The *deuto-acetate* is prepared also in two manners, by treating either the red oxide of mercury, or the hydrate of the deutoxide, with boiling acetic acid. In the first instance, the red oxide is simply dissolved in the acid, without giving rise to any phenomenon, and when the liquid is saturated and filtered, crystals of deuto-acetate are obtained. " But when the hydrate † is employed, at the same time that it forms deuto-acetate, there is also proto-acetate formed. There takes place a phenomenon analogous to that which occurs in the preparation of oxymellite of copper. It would seem that if, in the first case, when red oxide is used, it does not form any proto-nitrate, it is because the oxide, having a much stronger aggregation than the hydrate, resists more forcibly the disoxygenating action of the elements of the acetic acid. However this may be, the crystals of deuto-acetate, separated from the mother water and dried, possess the following properties:—They are white, have the form of plates, slightly micaceous, transparent, and united into groups, resembling considerably boracic acid. This salt differs essentially from proto-acetate by its physical and chemical properties. In the proto-acetate the crystalline plates are very brilliant, elastic, resisting the action of the pestle to break them, lighter than water, (certainly wrong, A. D.) and sparingly soluble in that liquid; while, on the contrary, the crystals of the deuto-acetate are much more dull, very friable, are easily reduced to powder, of greater specific weight, very soluble in water, and exhale a very agreeable odour of acetic acid. This salt is precipitated yellow by potass and soda. It exhibits, like the proto-acetate, a very singular phenomenon when treated with water. At the temperature of 55° Fahr. or 60° Fahr., four parts of water dissolve one part of this salt; this solution undergoes no alteration when it is kept in close vessels, but if it be left some days exposed to the contact of the air, or if, which answers still better, it be heated to ebullition, it disengages a certain quantity of acetic acid, and lets fall deutoxide of mercury of a very vivid red colour, when the concentration has been sufficiently carried on. If the deposit of red oxide be separated by filtration, a new crystallization of deuto-acetate is obtained. These crystals, dried and redissolved in water, and again boiled, re-act in the same manner. If the liquid be very acid, it does not form any precipitate, which explains why the decomposition is not perfect. By the precipitation of a portion of the

* In the published paper, which is probably more accurate, the proportions are 79.7, and 20.3.—(A. D.)

† Hydrate arising from a mercurial solution, which does not form a precipitate with common salt, and consequently does not contain any protoxide.—Ch. and R.

oxide, the liquor becomes more acid, and retains more forcibly the salt in solution."

In analyzing the deuto-acetate, M. Garot made use of a stream of sulphuretted hydrogen, as for the proto-acetate. The mean of several trials gave him, deutoxide of mercury, 67; acetic acid, 33 = 100.*—Ch. and R.

M. Garot used proto-nitrate prepared according to the process of M. Henry, with 60 parts of nitric acid, sp. gr. 1208, and 100 parts of mercury. This salt does not contain a trace of deuto-nitrate.

To the published paper, is added a note by M. Soubeiran, which states that the partner of Keyser offered to M. Robiquet for sale, a quantity of deutoxide of mercury which remained on his hands, in consequence of the disrepute into which his preparation had fallen, proving evidently that Keyser employed the deuto-acetate.—(A. D.)

ACETAS HYDRARGYRI.—The (French) government in 1772 bought and published the secret of the composition of the acetate of mercury.† This salt was indeed looked upon as a mild and certain cure for the most obstinate syphilitic affections; but experience has shown that it often fails in its effect; that it produces salivation; and that it has all the inconveniences attributed to other mercurial preparations.‡—Ch. and R.

MURIAS HYDRARGYRI CORROSIVUM.—The French Codex prescribes the employment of 480 parts of supersulphate of mercury not washed, the same quantity of muriate of soda, and 450 parts of black oxide of manganese. It is essential that the sulphate of mercury should be completely in the state of bisulphate, and for this reason it is necessary to employ a superabundance of sulphuric acid. Nevertheless it is very difficult, especially on the large scale, to avoid obtaining some protosulphate, which by its decomposition gives rise to some protochlorure (calomel.) It is to obviate this inconvenience that some manganese is added. In spite of this addition chloride is still formed, but as the chloride of mercury is much heavier (less volatile) than the bichloride, it remains in the upper (lower, A. D.) part of the cake of sublimate, and forms a very distinct zone, which may be separated. The portions (of chloride) thus put aside are collected and sublimed separate from the others (the bichloride.)

A warm and saturated solution of bichloride of mercury crystallizes by cooling into a confused mass, whilst a solution which contains only an eighth or tenth part of its weight of the salt crystallizes, according to M. Guibourt, in fine white and satiny needles.—Ch. and R.

In the notes upon the translation of the French Pharmacopœia, it is

* In the published paper the proportions are 68 and 32.—(A. D.)

† Recueil des Observations de Medicine Militaire of Hautesierk, Vol. ii.

‡ Swediaur, Maladies syphilitiques, Vol. ii. p. 177.

said that it is better not to add any oxide of manganese, as it gives a rosy tint to the sublimate; and that to give a greater degree of solidity, and a vitreous appearance to the cakes of corrosive sublimate, it is usual to increase the heat toward the end of the operation, and after the greater part has been sublimed. When the mass becomes transparent the matrass is partly uncovered, and the heat gradually diminished. When white cold it is cautiously separated, and is to be preserved in the dark.*—(A. D.)

MURIAS HYDRARGYRI CORROSIVUM.—According to M. Barbier, Dr Cullerier is always successful (in the treatment of syphilis) with corrosive sublimate.

This salt may be used with great advantage for the preservation of animal matters, which, from immersion in a solution of it in water, acquire the hardness of wood, and become imputrescible.

M. Orfila has recommended albumen in cases of poisoning by sublimate. For this purpose diffuse whites of eggs in cold water, (the yolks may also be kept,) in the proportion of one dozen of eggs to two pounds of water, and administer a glassful of it every ten minutes. † M. Taddei has recommended gluten and wheat-flour. This chemist has found that animals may take large doses of sublimate mixed with these substances, because it is then converted into calomel. ‡—Ch. and R.

Professor Taddei § found that by kneading together one part of corrosive sublimate with four of gluten of wheat-flour, the compound acquires considerable hardness, and some liquid is separated, in which no mercury can be detected. The gluten loses its elasticity and ductility, remains hard though immersed in water, and permanently resists putrefaction. After a long time it gets covered with a gray substance, which is revived mercury. Entire wheat-flour made into a paste with a solution of corrosive sublimate cannot afterwards be separated into gluten and starch by the usual process. Water in which it is washed remains limpid, and the mass does not ferment. The deutoxide of mercury, and all the salts containing it, act in the same way, and the mercury is in every instance reduced to the state of protoxide.

Having ascertained that three or four grains of corrosive sublimate never failed to prove fatal to a fowl, Professor Taddei found that twice or thrice the quantity, when mixed with a sufficient quantity of gluten, zimome, or wheat-flour, might be given with impunity; four times the quantity, however, or 14 to 16 grains, proved fatal slowly by inducing mercurial action.

The chief obstacle to the use of gluten as an antidote is its insolubility; and he found that the best means of removing this was to combine it with soap. He gives a formula for an emulsion of soap, by

* Histoire abregée des drogues simples. 2d edit. 1826. T. i. p. 121.
† Orfila, Secours à donner aux empoisonnés. 1821.
‡ Annales de Chimie et de Physique, Vol. xix. p. 76.
§ Sopra un nuovo antidoto pel sublimato corrosivo. Pp. 107. 8vo. Firenze, 1820.

dissolving one part of soap of potass in ten of water, and triturating with it five or six parts of fresh gluten added in successive portions. An emulsion of a gray-white colour is soon formed. To preserve it for use, this emulsion may be evaporated to dryness in flat plates by the heat of a stove. In this state, after being powdered, it may be kept in a glass vessel, and it forms a frothy emulsion when triturated with water. I have, however, found the preparation troublesome and tedious, so that it will never be of any use in practice. But I have no doubt that wheat-flour, which is always at hand, will serve, by merely diffusing it through water, as an efficacious antidote in cases of poisoning by corrosive sublimate. The efficacy of albumen is well known, and its utility was fortunately confirmed publicly in the case of M. Thenard, who during lecture swallowed a solution of corrosive sublimate instead of *eau sucrée*.

Corrosive sublimate is also converted into calomel by kermes mineral. *—(A. D.)

Calomel.—The process of M. Josiah Jewell, in which it is intended to force the mercurial vapour into a vessel containing boiling water, appears to present difficulties in the execution, and to be attended with danger of the vessels breaking. M. Henry Junior, proceeding upon the same principles as M. Jewell, and making use like him of water, has described an extremely simple apparatus, which has succeeded with him completely. The memoir itself should be consulted, † because there is a drawing of the apparatus, which renders the process more easily comprehended.

Calomel is also obtained by means of sulphate of mercury, but then no manganese is employed (in its preparation,) and the proportion of sulphuric acid is diminished. It is sublimed twice to free it from the corrosive sublimate which occupies the upper part of the neck of the matrass.—Ch. and R.

I have not been able to find the original description of M. Jewell's process, but it has been inserted in different French periodical publications, ‡ and is adopted into the French Codex.

" Murias mercurii dulcis mediante aqua subtilissime divisus *juxta methodum Josiae Jewell.*

" Take of calomel any quantity; put it into a porcelain retort entirely luted; let the neck be inserted into a glazed earthenware or porcelain receiver filled with water. Heat both vessels by applying fire under them; the retort to such a degree that the salt may sublime, and the receiver so that the water may boil. The vapours of the calomel and water being thus mutually mixed, the mercurial salt will be deposited in the water in the form of a very white and ex-

* Büchner's Repert. B. xiii. p. 252.

† Journal de Pharmacie, T. viii. p. 546 and 547.

‡ Bibliotheque Britannique; Bulletin de Pharmacie, T. iii. p. 43.

tremely subtile powder, which is to be dried in the shade, and preserved for use."

M. Henry * has modified the apparatus employed. Instead of using calomel previously prepared, it is made by the same operation in which it is condensed by vapour. He uses two retorts, the necks of which are inserted into the opposite orifices of a three-necked balloon, while a lateral spout is inserted into a two-necked bottle half filled with distilled water, and furnished with a tube of safety. The one retort is merely for the production of steam for condensing the calomel. The other retort must have a very short and wide neck, and be capable of standing the heat of a reverberatory furnace, in which it is placed; and into this retort M. Henry introduces a mixture of six parts of deuto-sulphate of mercury, four parts of mercury, and three parts of sea-salt, as the mercurial vapour is more slowly generated, and less apt to obstruct the neck of the retort than when calomel is used. Soon after the application of the heat white vapours appear in the balloon, condense on its sides like snow, and are washed down into the bottle below. When the vapours cease to appear, the apparatus is allowed to cool, the white powder is collected upon a filter and washed, until the water employed cease to indicate the presence of corrosive sublimate. The powder is then to be carefully dried, and should be passed through a very fine sieve, to separate some particles of calomel not sufficiently fine.—(A. D.)

Hydrargyri submurias præcipitatum.—MM. Robiquet and Guibourt † have remarked in regard to this process, in which a solution of sea-salt is poured into a solution of proto-nitrate of mercury, that when a concentrated solution of the proto-nitrate was precipitated by strong muriatic acid much corrosive sublimate was produced, in consequence of the reciprocal action of the nitric and muriatic acids; and that much nitrous gas was disengaged at the same time.—Ch. and R.

Oxidum hydrargyri nitricum.—Of all the processes (described in the Dispensatory,) that of M. Paysse ‡ is the only one which is good. In the two first, (those of Edinburgh and London,) the dried nitrate is ordered to be powdered; but it is to be observed that this method greatly impairs the beauty of the oxide, for (in this way) it very rarely has a crystalline aspect. Several practitioners are of opinion that this brilliancy depends upon the oxide preserving, while it loses the acid, the crystalline form of the nitrate. It is at least certain that the product is always more beautiful when the nitrate is evaporated in the same vessel in which the preparation of red precipitate is completed.

In the second paragraph of the third process (that of Dublin)

* Journal de Pharmacie, T. viii. p. 555.

† Ibid. T. vi. p. 218.

‡ Annales de Chimie, T. xli. p. 195. The manufacture of cinnabar at Amsterdam had been previously described by M. Tuckert, Ann. de Ch. T. iv. p. 25; also Nicholson's Journal, 4to, Vol. ii. p. 1; and more recently by M. Ferber in Journal de Pharmacie, T. i. p. 92.—(A. D.)

there are various assertions which are not correct. Nitrate of mercury after being dried does not melt, nor is the oxide of mercury volatile, but it is decomposed by an excess of heat. When it is pure, it ought not to leave any residuum, because the metal on being reduced flies off.

This operation is not attended with any difficulty to those who are accustomed to perform it; the success depends solely on the manner of applying the heat.—Ch. and R.

Subsulphas hydrargyri flavus.—There exist two sulphates of mercury, one with a base of protoxide, the other of deutoxide, so that if the action of the sulphuric acid be not carried far enough, all the mercury will not be converted into a deuto-sulphate, and when it is treated with water, a mixed precipitate is obtained of subdeuto-sulphate, which is yellow, (this is the Turpeth mineral,) and of subproto-sulphate, which is white. To prevent this inconvenience, an excess of sulphuric acid is used, and the heat is continued until sulphurous acid is no longer disengaged.—Ch. and R.

Sulphuretum hydrargyri. It does not, however, appear to be demonstrated, that there exist two sulphurets of mercury. The black sulphuret obtained by trituration is evidently a mixture, but that which is formed by the double decomposition of a pure hydrosulphuret, and of a mercurial salt, is very certain in its proportions, and ought to be referred to as a type. This black sulphuret, according to the assertion of Seguin, when heated properly in a glass tube, can be changed into red sulphuret without loss of weight; and reciprocally, the red sulphuret may be transformed into black sulphuret without separating from it either sulphur or mercury. It thence results that there exists only one sulphuret, and that the difference of appearance proceeds from a different arrangement of particles, or their more or less intimate combination.—Ch. and R.

M. Guibourt * is of opinion that there is only a bisulphuret of mercury, and that what has been considered as a proto-sulphuret is only a mixture of bisulphuret with mercury, as it yields quicksilver by mere compression. The bisulphuret of mercury has not always the red colour of vermilion, for when the salts containing the peroxide of mercury are decomposed by sulphuretted hydrogen in excess, a fine black precipitate is obtained, from which no mercury can be separated by compression, and which by sublimation is entirely converted into cinnabar, without the separation of sulphur or mercury, whereas the æthiops mineral yields cinnabar and mercury.—(A. D.)

Super-acetas plumbi, *Lond.*—The formula of all the three

* Annales de Chimie et de Physique, T. i. p. 42 .

colleges afford the same salt, which is the neutral acetate of lead. There is no super-acetate of lead.—Ch. and R.

The criticism here, which refers solely to nomenclature, is correct, and accordingly, in the last impression of the London pharmacopœia this salt, the sugar of lead of commerce, is named acetate of lead, as it already was by the other colleges, and the ceruse is now properly recognized by that of Dublin as a carbonate instead of a sub-acetate, as formerly. The Edinburgh college still call it the white oxide.—(A. D.)

Stanni pulvis.—In manufactories there is a more expeditious process: Melted tin is poured into a very wide-bottomed iron pot, and then agitated by means of a new birchen broom. The metal is thus minutely divided.—Ch. and R.

Oxidum zinci.—This process succeeds better, and is quicker when all the zinc which is wished to be converted into oxide is put at once into the same crucible, taking care, however, that the crucible be not more than two-thirds filled. The cover of the crucible is placed so that the air may have free access. The heat is then to be applied; the zinc is not long in melting; it then gets red and afterwards catches fire. The oxide forms at the surface of the melted metal in a light, white, spongy mass, which is to be taken out by a long handled ladle; a well regulated temperature is to be sustained, and the oxide is to be continually removed as soon as it is formed.

The recommendation not to operate but on small pieces, for fear of the oxidation being stopped by the oxide covering the surface, is wrong, because zinc is volatile, and its vapour always rises and is burnt in the empty part of the crucible.

The process of M. Phillips (by precipitation) does not answer the end. *First*, because it is not the oxide which is thus obtained, but rather a sub-carbonate; *secondly*, the state of division of the particles is no longer the same, and there are many purposes for which the sub-carbonate cannot be substituted for the flowers of zinc.—Ch. and R.

Sulphas zinci.—The sulphate of zinc may be purified by simply repeated crystallizations, or by adding to the concentrated warm solution oxide of zinc, which takes the place of other metals.—Ch. and R.

Alcohol.—Acetate of potass is also used in the proportions of two parts of alcohol at 36°, (sp. gr. 847,) to one of the acetate, which furnishes in two rectifications alcohol at 40°, (sp. gr. 827.)

The muriate of lime gives, by following Richter's process, the strongest alcohol. It consists in taking muriate of lime powdered and strongly heated to redness, and introducing it still warm into

a retort, or into an alembic, pouring on this salt, and at intervals, nearly the same weight of rectified alcohol, and shaking the mixture at each addition. After the reaction, which takes place accompanied by great heat, is finished, the mixture is heated to ebullition, and the portions of the product obtained at different periods of the distillation are to be kept distinct. Alcohol is thus obtained of a density equal to 0.792, at a temperature of 20° Cent. (67° Fahr.) and of 0.79235 at 17°.88 Cent. (64° Fahr.) according to M. Gay Lussac. It is this which is called absolute alcohol.

The process of Lewis with fixed alkali carries it to 0.791, at the same temperature. The best rectified alcohol which could formerly be obtained had the sp. gr. of 0.820 at 16° Cent. (61° Fahr.)

The alcohol of Richter, regarded as the purest that can be obtained, is a colourless liquid, transparent, of a fragrant and very agreeable odour; the taste is penetrating and burning. It does not act at all on tournesol. By agitation it forms bubbles which instantly disappear; it excites the vital powers if taken in small doses; on the contrary, it annihilates them and produces intoxication, if taken in too large a quantity.

Klaproth is of opinion that the alcohol of Richter differs from common alcohol, not only in the proportion of water it contains, but also by the proportions of its constituent parts, and moreover, that it deposits soot on combustion. At any rate, the process by acetate of potass is sufficient for pharmaceutical purposes.

One means of ascertaining if alcohol be pure, is to put into it a fragment of anhydrous caustic barytes. It remains entire if the alcohol be well deprived of water, but it immediately deliquesces, if the alcohol contain water, however little.

The new alcohometer of M. Gay Lussac has been spoken of in the note on *Alcohol dilutius*.*—Ch. and R.

Æther sulphuricus.—A new theory has superseded that given in the Dispensatory. The alcohol in the process of etherization is divided into two parts; the first passes into the state of ether, by losing oxygen and hydrogen in the proportions necessary for forming water; the hydrogen causes the sulphuric acid to pass into the state of sulphuretted hydrogen, and the oxygen by uniting to the second portion of alcohol, constitutes a new vegetable matter. The sulphurous acid gas, the carbonic acid gas, the ethereal oil, the carbonated hydrogen gas, the water formed, and the carbon deposited, arise from the reaction of the element of the vegetable matter, and from a decomposition of the sulphuretted hydrogen. This theory is due to M. Dabit, apothecary at Nantes. It is the result of observations which he has made for a number of years.

* See this Appendix, p. 8.

M. Gay-Lussac regards ether as formed of two volumes of bicarbonated hydrogen gas, and one volume of the vapour of water.

MM. Thenard and Chevreul have each made a classification of ethers.

The Dispensatory does not speak of acetic, muriatic, phosphoric, or arsenic ethers.

Ether, which was not well understood till 1730, is, however, of more ancient origin. Valerius Cordus described it in 1537.—Ch. and R.

M. Dabit was the author of two papers * on the theory of the formation of ether, in opposition to that of MM. Fourcroy and Vauquelin, then generally received. † Dabit's theory was afterwards adopted by Sertuerner, ‡ Vogel, § and others. ||

M. De Saussure Junior, ¶ stated the composition of ether to be, 67.98 carbon, 17.62 oxygen, and 14.40 hydrogen; or 100 of bicarburetted hydrogen, and 25 of water. Gay-Lussac ** corrected the determination as stated above.

The classification of ethers by M. Thenard †† is into three kinds; 1*st*, those consisting of hydrogen, carbon, and oxygen, and always formed by the action upon alcohol of a fixed acid having a strong affinity for water. They contain none of the acid employed, and are identical. To this kind belong the sulphuric, phosphoric, arsenic, and fluo-boric ethers. 2*d*, Those composed of bicarburetted hydrogen and the acid by which they are generated. These are the hydrochloric and hydriodic ethers, with the hydro-bicarburet of chlorine. 3*d*, Those consisting of alcohol and the acid employed in forming them. These are the nitric, or rather hypo-nitrous, acetic, benzoic, oxalic, citric, tartaric, and gallic. Of these the two first are more volatile than water, the others less.

The original classification of M. Chevreul I have not been able to find, but it is said ‡‡ that he divides them into two kinds. The first he calls *Ether hydratique*, which corresponds with Thenard's first kind, and the second includes those originating from a direct combination of acid with percarburetted hydrogen, viz. the hydrochloric and hydriodic ethers.

Of the ethers omitted in the Dispensatory, because they do not occur in any of the British Pharmacopœias, it is unnecessary to notice here the phosphoric and arsenic, because they are identical with the sulphuric. The processes for making the acetic and muriatic are subjoined from the Parisian Codex.

" *Acetic ether.*—Take of alcohol, specific gravity, 0.8233, 3000 parts; acetic acid, specific gravity, 1.0745, 2000 parts; sulphuric acid,

* Annales de Chimie, T. xxxiv. p. 289; An 8 and T. xliii. p. 101.
† Ibid. T. xxiv. p. 229; and T. xxxiv. p. 318.
‡ Gilbert's Annalen der Physik, Bd. lx. p. 54.
§ Journal de Pharmacie, T. vi. p. 1.
|| Annales de Chimie et de Physique, p. MM. Gay-Lussac et Arago, T. xxx. p. 62.
¶ Annales de Chimie, T. lxxxiv. p. 294.
** Ibid. T. xcv. p. 311.
†† Traité de Chimie, T. iv. p. 146.
‡‡ Dictionnaire Technologique, T. viii. p. 302.

specific gravity, 1.8312, 625 parts. (Thenard uses only 128.) First introduce into a glass retort the alcohol and acetic acid; next add the sulphuric acid, and mix them immediately by shaking the retort; afterwards adapt a receiver to the retort by means of a wide-bellied adopter. Then distil with a heat gradually increased until there pass into the receiver 4000 parts. With this mix by agitation a small quantity of subcarbonate of potass; let it rest to allow the salt to subside; pour off the liquid, and again draw off by distillation 3000 parts of a purer ether, whose specific gravity should be 0.917."

"The same ether may be prepared in another way. Take of acetic acid, specific gravity 1.0745, and of alcohol, 0.8233, equal parts; mix them intimately, and distil until a twelfth part of the whole remain; pour back the distilled fluid into the retort and distil again; repeat this operation a third and a fourth time. Then, as above, distil after the addition of some subcarbonate of potass, and a very pure ether will be procured." This latter method is very tedious, and is now laid aside. In the former process the sulphuric acid acts by its strong affinity for water, thus rendering the acetic acid and alcohol stronger."

Acetic ether may be obtained by means of nascent acetic acid. The process was devised by Bucholz, and is modified by MM. Laplanche and Martin.* Take of acetate of lead 2500 parts, sulphuric acid sp. gr. 1.8312, 1000 parts; alcohol, sp. gr. 8.329, also 1000 parts. Introduce the sugar of lead bruised, not powdered, into a retort, and pour upon it the acid and alcohol mixed, connect with the retort an adopter and a receiver, and distil until the product amount to four-fifths of the alcohol employed. Shake this ether with subcarbonate of potass, decant it and re-distil it. This is said to yield a more fragrant ether at less expence. Acetic ether is a transparent colourless fluid, having a peculiar very fragrant odour. It is heavier and yet more volatile than alcohol. It unites in all proportions with alcohol, and dissolves in seven parts of water. It dissolves camphor, resin, the volatile oils, and some of the fixed oils.

It is employed in medicine as a stimulant and antispasmodic, in cases of cramp of the stomach, indigestion, and drunkenness. The dose is from fifteen to twenty drops. It is also applied externally by friction as a resolvent, and against rheumatic pains.

Muriatic or hydrochloric ether.—"Take of muriatic acid, sp. gr. 1.208, and of alcohol, 0.8233, equal weights. Introduce them into a retort placed in a sand-bath, and connected with a Woulfe's apparatus. Put into the first receiver a sufficient quantity of water at 60°—65° Fahr., leave the next and subsequent receivers, of which the height should be much greater than their width, empty, and surround them with ice. Distil the mixed fluids with a gentle fire. The etherial gas passing into the first receiver will then free itself from any acid or alcohol, and will be condensed in the others into the form of a liquid, which is *muriatic ether*, and is to be kept in a very close vessel and in a cool place."

"If into the second receiver alcohol be put, the etherial gas will mix with it, and when its weight becomes doubled, *alcoholized muriatic*

* Dictionnaire des Drogues, T. iii. p. 446.

ether is obtained. When pure, the ether has sp. gr. 0.9006, and the alcoholized ether 0.8685." Muriatic ether is a colourless volatile liquid, converted into gas at 52° Fahr. It is soluble in alcohol, and very sparingly in water, to which, however, it gives a saccharine taste, having some analogy with that of mint.—(A. D.)

ÆTHER SULPHURICUS.—It was in 1774 that M. Cadet of the Royal Academy of Sciences, published this fact in their memoirs, when he undertook an investigation of ether, for the purpose of diminishing the high price of this product, so that it might be applied to the fabrication of elastic instruments. In fact, the base of these latter was the caoutchouc, which is soluble in ether. This discovery has since been attributed through mistake to M. Boullay. M. Godefroi, apothecary at Paris, has confirmed the facts in a work * just published. The priority of date claimed for Lewis in the first edition of his Dispensatory still remains unanswered.—Ch. and R.

Dr Lewis's right to the priority of the discovery that the residuum of the distillation of ether was capable of furnishing, with additional alcohol, an additional quantity of ether, is of older date than the first edition of his Dispensatory,† for it is still more evident from an earlier work. ‡ After describing accurately the phenomena observed on distilling a mixture of a pound of sulphuric acid with a pint of highly rectified spirit, he says, " In order to try whether the remainder in the retort was not still capable of making the same change upon a fresh quantity of spirit of wine, as it had done upon that already employed, we added to it as much spirit as at first, and repeating the distillation, observed the same phenomena as before. Upon examining the liquors, they were found to perfectly agree with the former, except that we now gained a much larger quantity of oil. " This success occasioned the experiment to be again repeated with another fresh quantity of spirit of wine, which yielded the same phenomena, and the same kind of liquors, but in different quantities; the oil in particular was double of what we obtained in the last distillation; the whole amounted to about an ounce and a half. " We intended to have repeated the process a fourth time; but were prevented by a piece flying out of the retort, just below the surface of the matter, as it began to rise. What remained in the retort was still acid; and that part which issued out at the fracture (which it did with great violence) corroded a piece of marble which it had fell upon."—(A. D)

ÆTHER NITROSUS.—M. Boullay first thought of funnels with stop-cocks in the centre of the tube, for the preparation of ethers,

* Principes Elementaires de Pharmacie. 1826.

† The New Dispensatory, intended as a correction and improvement of Quincy. 8vo. London, 1753. See p. 297.

‡ The Pharmacopœia of the Royal College of Physicians at Edinburgh, faithfully translated from the fourth edition, with useful notes on the Materia Medica, and practical observations on the preparations, both simple and compound; to which are added the prescriptions, as well extemporaneous as officinal, in use at the Royal Hospital. By William Lewis, M. B. F. R. S. Pp. 8vo. 362. London, 1748.

and they bear the name of their author, to whom we owe some excellent essays on the subject of ethers, &c.—Ch. and R.

M. Boullay has written many papers on ethers, which are inserted in the Annales de Chimie, Bulletin de Pharmacie, and Journal de Pharmacie. He also defended in 1815, before the Faculty of Sciences in the University of France, an inaugural thesis on ethers. The description of the apparatus here alluded to, was published first in the Annales de Chimie, T. lxii. and lxiii, and afterwards more in detail in the third volume of the Bulletin de Pharmacie, p. 145. It may be described as consisting essentially of three parts, a funnel, a pear-shaped receiver, and a tube, with one stop-cock between the funnel and receiver, and another between the receiver and the tube. The receiver must also be furnished with a tubulature at its upper part, capable of being accurately closed. The tube is intended to be inserted through the tubulature of a retort or other vessel to the depth that is required; the funnel to receive the fluid to be introduced through the tube. The lower stop-cock being closed, and the upper as well as the tubulature open, a fluid poured into the funnel passes into the receiver, while the air escapes by the tubulature. The tubulature is then to be shut, and the fluid is allowed to pass through the tube more or less quickly, by opening the lower stop-cock more or less. This apparatus may be made either entirely of glass, or with platinum, or brass stop-cocks. The first kind is liable to accidents, the second is expensive, and the last is acted upon by some fluids, but upon the whole it is the most convenient.—(A. D.)

ÆTHER NITROSUS.—There are a very great number of processes for preparing nitric ether, among which the most approved are those of MM. Thenard,* Duroziez Jun.† and Petroz.‡ These processes are described in recent works on chemistry.

That of M. Thenard consists in taking equal weights of alcohol and nitric acid, introducing them into a retort of a capacity double their volume; placing the retort, by means of an iron triangle, on the furnace, and connecting it with five flasks, of which the first is empty, and the other four half filled with water saturated with sea salt; each flask is immersed in a vessel, where it is surrounded by a mixture of ice and salt, and receives the long branch of a tube which connects it with the preceding flask, in such a manner that this branch reaches to the bottom of its inside. Lighted charcoal is then put under the retort, and the liquor begins to boil. The fire must then be withdrawn, and water thrown from time to time on the retort by means of a sponge, to moderate the ebullition, which continually increases. The operation is known to be finished when, by leaving it to itself, the liquor ceases to boil. The apparatus is unluted after the opera-

* Mémoires de Physique et de Chimie de la Société d'Arcueil, T. i. p. 75.
† Journal de Pharmacie, T. ix. p. 191.
‡ Observations lues en 1820, à la Société de Pharmacie de Paris.

tion is completely terminated. The liquid product in the flasks, collected and re-united, is carefully put into a glass retort furnished with a receiver surrounded with ice. The nitric ether passes first, and to have it perfectly pure and deprived of acid, it is sufficient to mix it when cold with some powdered lime, and to decant it off at the end of a half an hour. From a mixture of 500 grammes of alcohol and 500 grammes of acid, about 100 grammes of excellent ether are obtained.

Brugnatelli * proposed to put 32 grammes of sugar with 64 grammes of alcohol into a retort, to which is luted a large receiver, and to add afterwards 96 grammes of nitric acid. The sugar is dissolved, the mixture boils, and a quantity of ether, equal in weight to the alcohol, passes over.—Ch. and R.

The method of M. Petroz is to take 60 parts of pure alcohol, 20 of nitrous acid, and 5 of sulphuric acid. He first mixes the alcohol with the sulphuric acid, and when the mixture has cooled the nitrous acid is added to it. It is then put into a retort furnished with a receiver. Some live charcoal is put under the retort, and the distillation is continued till 2 (20?) parts of product are obtained. The advantage of this operation is, that a Woulfe's apparatus is not required, and that a small quantity can be prepared in a very short time, when required.

M. Duroziez employed a process analogous to that used for uniting alcohol with vegetable acids. He put three pounds of alcohol at 36°, and a pound and a-half of nitric acid at 32°, into a tubulated retort placed in a sand-bath, and connected with a leaden worm terminating in a receiver. He then poured into the retort 12 ounces of sulphuric acid. The heat arising from the mixture was sufficient to commence the process, and he obtained 23 ounces of etherial fluid, which he mixed with an equal quantity of water, and on settling after agitation he got 10 ounces 4 drachms of ether. On applying heat to the retort, an additional quantity of very fragrant and sweet nitrous liquor was obtained. Thenard is doubtful that some sulphuric ether is formed, and MM. Faguer and Petroz, who repeated the process with success, think the washing with water insufficient to remove the whole nitrous acid, and that the usual process of adding a little magnesia, lime, or alkali is necessary. M. Guibourt † also confirmed M. Duroziez's process with a little modification.—(A. D.)

Spongia usta.—M. Chereau prefers keeping the sponge over the fire only until it is roasted. It then gives a straw-coloured powder. His reason is, that, given in the same doses as the black charred sponge, it has uniformly produced more certain effects in swellings of the thyroid gland. Is there a chemical reason for this? Does torrified sponge retain more of the iodine, which Dr Fyfe has proved to exist in this zoophyte, or of the substances stated

* Pharmacopœia ad uso degli speziali, e medici moderni della republica Italiana di L. Brugnatelli. 8vo. Pavia, 1802. P. 91.

† Dictionnaire des Drogues, T. ii. p. 463.

by Mr Hatchet? This has not yet been determined. All authors direct that the sponge should be burnt black and friable. The French Codex cannot be referred to on this point, for it only speaks of sponge prepared with and without wax. Lewis alone, without condemning the charring, finds fault both with the vessel and process which is used, by which the volatile salt of one part of the mass is disengaged before the other part is affected. He recommends the constant agitation of the sponge, or rather to introduce it into a machine resembling that which serves for the roasting of coffee, and constantly turning the handle until the operation be finished.* The instrument proposed by Lewis *(brulette)* would in fact answer perfectly well, and the product obtained would be more equal; but it is not an apparatus for charring. Then what was the object of Lewis?

There is a little lower a kind of contradiction in the article of the Dispensatory. † The author, after having given a useful lesson, falls into the fault which he censures. The use of sponge might have been abandoned at an earlier period, when it was not known that it contained iodine in the state of hydriodate, hydrosulphuret of soda, &c. &c. and of which no account could be given. This is not the case at present.—Ch. and R.

Expression.—To the means of expression mentioned in the Dispensatory, the apparatus *(filtre-presse)* of M. Real may be added. ‡ It is constructed upon the principle that fluids exert their pressure in all directions, and that it may be measured, in regard to the vessel containing the liquid, by the surface of the base multiplied by its heighth. This apparatus consists of a box of tin containing the powder, whose principles, soluble in water, it is wished to extract. From the centre of this box a perpendicular tube arises 50 or 60 feet high, which is filled with water. The water then passes through the powder previously moistened with water, dissolves whatever is soluble, and drops into a receiver through minute holes, with which the bottom of the box is perforated. But this apparatus has been since improved.

M. Payen has also described new filters. §—Ch. and R.

The filtering press of Count Real described in the preceding note is excessively inconvenient, on account of the great length of the co-

* Lewis's New Dispensatory, p. 259. Edit. 1781.

† The sentence alluded to is, "Until Dr Coindet's observations, this remedy was considered to be insignificant by scientific pharmacologists, although in repute among the vulgar; and it ought to furnish a useful lesson, not to disregard or deny the truth of a popular observation, merely because we cannot explain it. Burnt sponge also contains charcoal, and its use may be entirely superseded by these substances, (iodine and charcoal,) which may be obtained in other manners, at a much cheaper rate."—(A. D.)

‡ Journal de Pharmacie, T. ii. p. 165 and 468.

§ Journal de Chimie Medicale, T. ii. p. 67. Dictionnaire de Technologie.

lumn of water by which the pressure was made. This inconvenience was in some degree rectified by modifying the apparatus, and substituting a column of mercury for one of water. * Dr Romershausen afterwards, instead of applying strong pressure *above* the fluid, to be forced through the substance in powder, of which the soluble parts were to be extracted, attained the same end by applying strong suction *below*. With this view he formed in various ways a vacuum, or exhausted the receiver below the filter, and the fluid was then forced through by the pressure of the atmosphere. † But in practice the results of these modes of forcible solution and extraction have disappointed expectation. ‡—(A. D.)

Succi spissati.—The word *extract* is almost, and justly, banished from this Dispensatory, for this generic term is faulty. It only signifies an extracted product. But, as the extraction is an indispensable and general preliminary operation, without which nothing is done, it follows that there is no pharmaceutical product existing to which such a vague denomination may not be applied. It is proposed to substitute for the term *juice*, that of *opol*, and for the term *extract*, that of *opostol*, a juice thickened or concentrated, as it is regarded in the Pharm. Genev. 1780.—Ch. and R.

As frequent reference is made in these notes to the pharmaceutical nomenclature of M. Chereau, and as his terms occasionally occur in the modern French writers, I shall insert a tabular view of it copied from a systematic work. § I have not translated the terms, which are easily understood, because it is essentially a French nomenclature. Upon its merits I shall not give any opinion, especially as I have not seen the work in which its principles are finally developed. || It was first brought into notice by a favourable report by MM. Pelletier, Robiquet, and Henry. ¶ Afterwards some modifications by M. Henry were adopted by M. Chereau, ** and the table now published is conformable to this improvement. I must confess that my opinions on pharmaceutic nomenclature have undergone a great change since I first suggested the formation of such a system as that of M. Chereau, †† and combated the opinions of Dr Bostock, ‡‡ to which I am now so much of a convert §§ as to join in the appeal of the veteran Hufeland.—(A. D.)

* Journal de Pharmacie. T. ii. p. 165.

† Dr Romershausen's Luftpresse. 8vo. Zerbst, 1818. See also Buchner's Repertorium, B. vi. p. 316, and B. xiii. p. 375.

‡ Gilbert's Ann. xv. p. 423, also Buchner's Repertorium, xviii. p. 124.

§ Chevallier et Idt, Manuel du Pharmacien. 8vo. Paris, 1825. See page 365.

|| M. Chereau, Nouvelle Nomenclature Pharmaceutique. 8vo. Paris, 1825.

¶ Journal de Pharmacie, T. viii. p. 15. ** Ibid. T. x. p. 126.

†† Edinburgh Review, Vol. iii. p. 466. Edinb. 1804.

‡‡ Edinburgh Medical and Surgical Journal, Vol. iv. 1808. See p. 372; and Vol. vii. 1811. See p. 367.

§§ Remarks on the Reform of the Pharmaceutical Nomenclature, and particularly on that adopted by the Edinburgh College. By John Bostock, M. D. &c. 8vo. Liverpool, 1807.

Remarks on the Nomenclature of the New London Pharmacopœia. By John Bostock, M. D.

Pharmaceutical Nomenclature and Classification, by M. CHEREAU, the Pharmaceutical Society, and of the Society of Medical Che- at the School of Pharmacy of Paris, and Head of the Central

CLASSES.	SERIES.	EXCIPIENS. OU RADICAUX.		ORDRES.	GENRES.		
MEDICAMENS. — CHRONIZOIQUES.	AVEC EXCIPIENT.	EAU,	Hydrool.	Hydrooliques.	Hydroolés.		1
					Hydroolats.		2
					Saccharolés.	Liquides.	3
						Mous.	4
						Solides.	5
		SUCRE,	Saccharol.	Saccharoliques.	Saccharidés.	Mous.	6
						Solides.	7
					Oleo-saccharols.		8
		VIN,	Œnol.	Œnoliques.	Œnolés.		9
		ESPRIT,	Alcool.	Alcooliques.	Alcoolés.		10
					Alcoolats.		11
					Alcoolats.	Saccharidés.	12
		ETHER,	Ethérol.	Ethéroliques.	Ethérolés.		13
					Ethérolats.		14
		BIERE,	Brutol.	Brutoliques.	Brutolés.		15
		VINAIGRE,	Oxéol.	Oxéoliques.	Oxéolés.		16
		HUILE,	Oléol.	Oléoliques.	Oléols.	Liquides.	17
						Solides.	18
					Oléolés.		19
					Oléolats.	Liquides.	20
						Solides.	21
						Pyrogénés.	22
					Oléo-cérolés.		23
					Oléo-cérolés.	Résineux.	24
		GRAISSE,	Stéarol.	Stéaroliques.	Stéarolés.	Mous.	25
						Solides.	26
					Stéarates.		27
	SANS EXCIP.	SUCS,	Opols.	Opoliques.	Opolés.		28
					Opostolés.	Mous.	29
						Secs.	30
		FECULE,	Amidol.	Amidoliques.	Amidolés.		31
		POUDRE,	Pulvérol.	Pulvéroliques.	Pulvérolés.		32
		ESPECES,	Spéciols.	Spécioliques.	Spéciolés.		33
ACHRONIZOIQUES.	AVEC EXCIP.	EAU,	Hydrool.	Hydroolitiques.	Hydroolites.		34
		SUCRE,	Saccharol.	Saccharolatiques.	Saccharolites.		35
		MUCILAGE,	Mucol.	Mucolitiques.	Mucolites.		36
	SANS EXCIP.	SUCS,	Opols.	Opolitiques.	Opolites.		37
		PULPES,	Pulpols.	Pulpolitiques.	Pulpolites.		38

Apothecary, Associate of the Royal Academy of Medicine, Member of mistry of Paris, &c.; revised and approved by E. N. HENRY, Professor Pharmacy of the Hospitals of Paris, &c.

NOMS GENERIQUES.	NOMS SPECIFIQUES NOUVEAUX.	NOMS SPECIFIQUES ANCIENS.
1 Eaux médicamenteuses par solution.	Hydroolé camphré.	Eau camphrée.
2 Eaux distillées.	Hydroolat de fleurs d'oranger.	Eau distillée de fleurs d'oranger.
3 Sirops.	Saccharolé liquide de violettes.	Sirop de violettes.
4 Conserves, gelées, pâtes.	Saccharolé mou de cynorrhodon.	Conserve de cynorrhodon.
5 Pastilles, tablettes.	Saccharolé solide d'ipécacuanha.	Pastilles d'ipécacuanha.
6 Electuaires.	Saccharidé mou de rhubarbe polyamique. (l)	Catholicon double.
7 Pilules.	Saccharidé solide de cynoglosse polyamique.	Pilules de cynoglosse.
8 *Oleo-sacchara.*	Oléo-saccharol de citron.	*Oleo-saccharum* de citron.
9 Vins médicinaux.	Œnolé de quinquina.	Vin de quinquina.
10 Teintures.	Alcoolé de cannelle.	Teinture de cannelle.
11 Esprits distillés.	Alcoolat de mélisse polyamique.	Eau de melisse, des carmes.
12 Elixirs, ratafias.	Alcoolat saccharidé d'anis.	Ratafia d'anis.
13 Teintures éthérées.	Ethérolé de castoréum.	Teinture éthérée de castoréum.
14 Ethers chargés de principes aromatiques.	Ethérolat de menthe.	Ether de menthe poivree.
15 Bières médicinales.	Brutolé de raifort polyamique.	Bière antiscorbutique.
16 Vinaigres médicinaux.	Oxéolé d'ail polyamique.	Vinaigre prophylactique.
17 Huiles exprimées liquides.	Oléolé d'amandes douces.	Huile d'amandes douces.
18 Beurres médicinaux.	Oléolé solide de cacao.	Beurre de cacao.
19 Huiles médicinales.	Oléolé de camomille.	Huile de camomille.
20 Huiles volatiles liquides.	Oléolat liquide d'anis.	Huile ou essence d'anis.
21 Huiles volatiles concrètes.	Oléolat solide de roses.	Huile ou essence de roses.
22 Huiles volatiles empyreumatiques.	Oléolat pyrogéné de corne de cerf.	Huile empyreumat. de corne de cerf ou de Dippel.
23 Cérats.	Oléo-cérolé mou.	Cérat blanc.
24 Onguens.	Oléo-cérolé resineux de térebenth. et de mucilage.	Onguent d'althæa.
25 Pommades.	Stéarolé de concombres.	Pommade de concombres.
26 Emplâtres par mélange.	Stéarolé solide de ciguë.	Emplâtre de ciguë.
27 Emplâtres par combinaison	Stéarate de protoxide de plomb.	Emplâtre simple.
28 Sucs.	Opolé de citrons.	Suc de citrons.
29 Extraits mous.	Opostolé de gentiane.	Extrait de gentiane.
30 Extraits secs.	Opostolé sec de quinquina.	Extrait sec de quinquina.
31 Fécules.	Amidolé de bryone.	Fécule de bryone.
32 Poudres.	Pulvrélé dentifrice.	Poudre dentifrice.
33 Espèces.	Spéciolés pectoraux.	Espèces pectorales.
34 Tisanes.	Hydroolite amer.	*Decoctum* amer du *Codex*.
35 Préparations magistrales avec le sucre.	Saccharolite amandé.	Emulsion.
36 Mucilages.	Mucolite de lin.	Mucilage de lin.
37 Sucs magistraux.	Opolite de cresson.	Suc de cresson.
38 Pulpes magistrales.	Pulpite de casse.	Pulpe de casse.

(l) Le terme *polyamique* répond au terme *composé*.

Elaterium.—By the term *fæcula*, diminutive of *fæx*, was understood the sediment, deposit, or grounds of liquids; but now by this expression we designate one of the immediate principles of vegetables, and which is nearly the same in all. However, as is justly observed, a distinction ought to be made between *alimentary fæcula* and *medicinal fæcula*. It is for this reason that the term of *amidol* has been proposed for the latter.

That which is called colouring fæcula has been named *chlorophyle*. It is to M. Lemaire Lisancourt that this term is due.—Ch. and R.

Olea Fixa.—Expressed oil is a very improper denomination. They are fixed oils, *oleols*. These are divided into liquid oleols, and concrete oleols. The first are the oils considered as more especially belonging to pharmacy, as the oil of sweet almonds, nut-oil, castor-oil. The butter of cocoa is an example of the second kind.—Ch. and R.

Linimenta.—Liniments are often combinations of oil and lime, of oil and ammonia, and ought to be classed with the soaps. Some contain only oil and camphor, and considering, as is done in the French Pharmacopœia, that they are all extemporaneous formulæ, they ought to have the name of *oleolites*.—Ch. and R.

Distillation.—The great improvement of distillation by M. Edouard Adams, and the discovery of the means of taking the greatest advantage of the latent heat of the vapour, should not be passed over in silence. In regard to water, the heat latent in the vapour is five and a-half times greater than that necessary to boil water. Other vapours have different capacities. MM. Cellier-Blumenthal and Desrosne have also contrived, by means of new arrangements, 1. to take advantage of all the heat evolved during the condensation of the vapour; 2. to obtain at one running spirits of the different degrees of concentration required in commerce; 3. to be able to keep up a perpetual distillation. In fact, the wine being introduced into their apparatus in a continued small stream, yields all its alcohol in the different vessels through which it passes, which is delivered at the opposite extremity. The want of material alone puts a stop to the distillation, if the liquor subjected to it do not form a deposit in the vessels. *—Ch. and R.

Distillation.—In modern classifications of the processes of distillation, *three* modes of distillation (as mentioned in the Elements of Pharmacy in the tenth edition of the Dispensatory,) are not recognized. There are only *two* modes of distillation, one with the alembic, and the other with the retort. If we have reference to the mode of applying the heat, distillation is performed, 1*st*, by

* Diction. Technologique, T. v. p. 85.

the naked fire; *2d*, by the water or sand-bath; and, *3dly*, by vapour. The product has either to be rectified, or it is distilled and rectified at one operation. In the one case it is a simple distillation, *(distillation à simple effet,)* in the other a double distillation, *(à effet double,)* as takes place in the new apparatus for spirits, and this new mode of distillation should be considered in any classification. Instead of a water-bath, there is employed at present, and in certain cases with advantage, a vessel of the same form, (as the alembic,) but much less deep, and of which the whole part which enters into the alembic is made of wire-cloth more or less close. Water is put into the outer vessel, so as not to reach the bottom of the inner, in which is put the matter to be distilled, and the alembic is arranged as usual. By this means all deterioration is avoided, as the subject of distillation is reached only by the vapour, and the product, free from all empyreuma, is so much the sweeter.—Ch. and R.

The apparatus here described is by no means new. Its discovery was at least claimed by Dr Webster in 1786. "The greater number of oils require for their distillation the heat of water strongly boiling; but there are many also which rise with a considerably less heat: such as those of lemon-peel, citron-peel, of the flowers of lavender and rosemary, and of almost all the more odoriferous kinds of flowers. We have already observed, that these flowers have their fragrance greatly injured, or even destroyed, by beating or bruising them; it is impaired also by the immersion in water in the present process, and the more so in proportion to the continuance of the immersion and the heat; hence these oils, distilled in the common manner, prove much less agreeable in smell than the subjects themselves. For the distillation of substances of this class, I have contrived another method; instead of being immersed in water, they are exposed only to its vapour. A proper quantity of water being put into the bottom of the still, the odoriferous herbs or flowers are laid lightly in a basket, of such a size that it may enter into the still, and rest against its sides, just above the water. The head being then fitted on, and the water made to boil, the steam, percolating through the subject, imbibes the oil, without impairing its fragrance, and carries it over into the receiver. Oils thus obtained possess the odour of the subject in an exquisite degree, and have nothing of the disagreeable scent perceivable in those distilled by boiling them in water in the common manner." * —(A. D.)

Olea volatilia.—(For the distillation of volatile oils) an alembic with a short pipe and with a capital surmounted by a refrigeratory should be employed, (the cold-still of the older pharmaceutists.)—Ch. and R.

* The Edinburgh New Dispensatory, being an improvement upon the New Dispensatory of Dr Lewis. 8vo. Edinburgh, 1786. See p. 371 and 386.

OLEA VOLATILIA.—The essential oils are not converted into vapour without undergoing some change in their composition, when they are distilled in vessels void of air. They do not rise at (*au-dessus*) 212°, unless they are carried over by another vehicle; but heated alone, they require a higher temperature.

Volatile oils seem to be composed, like the fixed oils, of two distinct substances, as for example the essence of anise-seed or of roses. The latter evidently contains two oils, the one concrete, and the other fluid, at an ordinary temperature. The congealed concrete oil is in brilliant, transparent, and colourless plates, according to the observations of M. Theodore de Saussure.* This philosopher also found that oxygen did not enter into the composition of rectified oil of lemons. M. Houton Labillardiere † ascertained the same thing in regard to oil of turpentine.—Ch. and R.

OLEA VOLATILIA.—M. Recluz, having put into a cucurbite 6 pounds of water and 1 pound of cinnamon of the first quality, got by distillation 4 pounds of milky water, very odorous, and 72 grains of benzoic acid, 36 grains in cubical crystals deposited on the sides of the receiver, and 36 grains in acicular crystals precipitated and mixed with the oil. ‡—Ch. and R.

COHOBATIO.

"Many have been of opinion, that distilled waters may be more and more impregnated with the virtues of the subject, and their strength increased to any assigned degree by *cohobation*, that is, by redistilling them repeatedly from fresh parcels of the plant. Experience, however, shows the contrary. A water skilfully drawn in the first distillation, proves, on every repeated one, not stronger, but less agreeable. Aqueous liquors are not capable of imbibing above a certain quantity of the volatile oil of vegetables; and this they may be made to take up by one, as well as by any number of distillations; the oftener the process is repeated, the ungrateful impression which they generally receive from the fire, even at the first time, becomes greater and greater.

"Those plants which do not yield at first waters sufficiently strong are not proper subjects for this process."—(Dispensatory.)

M. Deyeux, however, the learned professor of chemistry and pharmacy, has published that the *inodorous waters* were inodorous, only because they were not saturated with their volatile principles, and that, to arrive at the necessary point of saturation, it was necessary to recohobate them. *Cohobation* is that operation which takes place when the product of one operation is redistilled on a new quantity of the plant, and when this procedure is repeated a third, fourth, or even a fifth time. M.

* Annales de Chimie et de Physique, T. xiii. p. 259.
† Journal de Pharmacie, T. iv. p. 1.
‡ Manuel du Pharmacien, par MM. Chevallier and Idt, p. 164.

Deyeux in this manner obtained water of *lactuca virosa*, which was anodyne, and water of centaury, whose strong and expansive smell indicated that it was not without virtues. This, without doubt, is great authority. M. Chereau, however, does not differ much from the opinion in the Dispensatory. Taking water of lactuca, for example, it is obtained with all the necessary qualities by a single distillation, if care has been taken, especially for the lactuca, to prefer the stalk to the leaves, and the coloured leaves to the heart of the plant. He thinks that practical men have not been always satisfied with the results of cohobation any more than himself, and that they must also have observed the alteration mentioned. Besides, the object in view is not to present additional material to a solvent which is already saturated with it, and which may be regarded as incapable of being saturated with it anew, but to furnish it, from the first, with a greater solvent power, as will be explained.

The author of the Dispensatory advises the addition of alcohol to distilled waters, for no other purpose than to assist in their preservation. M. Chereau prefers adding it before distillation. It is evident, that, if there be any impropriety in adding alcohol to hydroolates, it will not be greater because this addition has been made before distillation, than if it be done after. The evil ought even to be less in the latter case. If the addition is made afterwards, the alcohol cannot be directly combined intimately with the water. It requires some time for the perfect union of these two liquids to take place. But when the alcohol, according to M. Chereau, has been previously mixed with the water, and has macerated along with it for a proper time on the plant to be distilled, it then rises, carrying with it all its aromatic principles, that is to say, all the two volatile principles which it may contain; principles that may be supposed to be distinct, because nothing proves in what circumstances the volatile oil and aroma are isolated, and in what they approach each other. The admission of these two bodies in fact is not modern; it was the opinion of the ancients. Boerhaave was acquainted with aroma, and named it *spiritus rector*. His theory may perhaps be revived, and M. Robiquet is not far from resuming it.

"Plants," according to the remark of that professor, "do not owe their odour and properties solely to an essential oil. Many plants, or parts of plants, furnish, by distilling them with water, products of a different smell from that which their volatile oil possesses. As an example, we may quote orange-flower water, of which the smell does not at all resemble that of *oleum neroli*. The same may be said of the water of valerian. There are many plants which are aromatic, and which, as the tuberose and jessamine, do not contain any volatile oil. It may therefore be con-

cluded, that these (volatile oils) are not always the cause of the scent of vegetables." *

Although, for justifying the addition of alcohol to waters intended to be distilled, M. Chereau has not collected a sufficient number of experiments to warrant a definitive conclusion, he thinks it proper, however, to describe the process as applied to lime-tree water, *(Aqua Tiliæ Europeæ.)* Take of the flowering tops of the lime-tree slightly bruised, 2.000; common water, 10.000; spirit of wine, $\frac{3}{6}$, † 500; in order to yield 5.000 parts. Macerate for 24 hours in an alembic, with a double bottom perforated, and furnished with a worm, then distil. The water-bath would be preferable.

The distilled lime-flower water thus obtained in 1825, exhaled a very agreeable smell, and kept well for a year. It indicated $11\frac{1}{2}°$ by the areometer of Baumé, water being 10, ‡ and it is probable that this increase of a degree compared to water cannot be very prejudicial. In the present year a similar product has been obtained from lime-tree flowers.

Distilled water of erysimum, (species?) in 1825 yielded a slightly troubled product still very odorous; same density.

Water of borage distilled for the first time with the addition of alcohol has furnished an odorous product, and it was easy to recognize that it was not its habitual herbaceous smell, common to all this sort of plants distilled with water. It was not at all coloured. From whence could the odorous principle proceed which was here developed? It was not owing to volatile oil, of which it did not otherwise offer a trace. This problem can only be resolved by admitting that the alcohol, united with a substance inodorous by itself, and when it has not, to use such an expression, a *conductor*, but which manifests itself, and allows its odorous particles to emanate when it meets with a proper and very volatile vehicle. Has the alcohol performed the part of this vehicle? It is probable. Is alcohol the only body endowed with this faculty, of extracting and rendering sensible odorous matters till then imperceptible? Certainly not. In musk, amber, and tobacco, according to M. Robiquet, it is ammonia which assists the other principles in the developement of their odour. For the

* Diction. Technolog. Vol. vii. p. 283. Considerations sur l'arome, by M. Robiquet, Journ. de Physique, September 1820.

† I suppose that this means that a spirit is to be employed, of which three-sixths are alcohol; or a spirit made of equal parts of alcohol and water.—(A. D.)

‡ This statement furnishes a striking instance of the superiority of the indication of sp. gr. by reference to water as 1000. In Baumé's hydrometer, water is assumed as 10 only in regard to fluids lighter than water, and this lime-tree water should therefore be about 0.990; but from the context, it is evident that it was heavier than water, or perhaps 11.5, water being 10, yet I doubt that this was the case, and I rather think that I have not understood the passage.—(A. D.)

volatile oil of some cruciform plants, as for instance that of the *Sinapis nigra*, according to the conjecture of the same author, it is sulphur. M. Chereau, from the effect of iodine put in contact with certain flowers, thinks it possessed of the same faculty. It is well known, however, that mere opinions have not the same value as direct and precise experiments; and for these we must wait, in order properly to appreciate this doctrine.

The aromatic waters of mugwort and of cinnamon are much superior when got by the process described; but it is on *inodorous* plants that it is proper to try this method.

Distilled waters have for a long time been divided into *aromatic distilled waters*, and into *inodorous distilled waters*. The example of borage water alone shows that this division is defective. Watery solutions, mineral waters, waters by distillation, are all comprehended under the generic name *water;* it becomes consequently difficult to classify them. To remedy this inconvenience, it is proposed to divide pharmaceutical waters into two kinds, those which are obtained by simple solution, and those which are obtained by distillation, and to give to the former the name of *hydroolés*, and to the latter that of *hydroolats*.—Ch. and R.

Aqua Rosarum.—Rose water keeps well for a year and even more.—Ch. and R.

I have no doubt that this is the case with carefully distilled rose water. It is when by hasty distillation a portion of vegetable matter is thrown over by violent ebullition that the distilled waters spoil. By the process of preparing the distilled waters from the volatile oil, introduced into the last editions of the London and Dublin Pharmacopœias, they keep for any length of time.—(A. D.)

Spiritus stillatitii.—In France, the term *alcoholat* has been generally adopted to designate *distilled spirits*. The taste and virtues of distilled waters do not appear to be due solely to a volatile oil with which they are impregnated. There are some reasons for thinking that the *spiritus rector* has some influence upon them.—Ch. and R.

The idea of a *spiritus rector*, or presiding spirit, originated with the alchemists, but the term was adopted by Boerhaave,* and had more definite ideas affixed to it. His words are: "All kinds of oils have a certain subtile, volatile substance adhering to them, and separable from them, called by the name of their presiding spirit; which is a moveable, odorous, high-tasted thing, produced by fire, and the true cause of very great effects. This spirit being innate in oils,

* A New Method of Chemistry, translated from the original of Dr Boerhaave's Elementa Chemiæ. By Peter Shaw, M. D. F. R. S. 2 Vols. 4to. 3d Edit. London, 1753. See Vol. i. p. 526.

detained and confined in them, communicates thereto a singular efficacious virtue, nowhere else to be found; and, when it entirely quits the oils, it leaves them sluggish and inactive, so as to be scarce distinguishable from one another; and as it spontaneously exhales from many of these oils, with a gentle heat, it mixes with the air, and leaves them insipid and inactive, so as to render them incapable of performing what they did before."—(A. D.)

Infusa.—Infusion is an operation to which bodies of a tender texture are submitted, when the soluble and active principles, the mucous, odorous, and colouring matters are wished to be obtained from them. It is practised on certain odorous roots; on barks, leaves, flowers, or flowering tops; but ought the same term to be applied to the operation and to its product, as has been hitherto done by practice, and by a strange abuse of words? The product of an infusion is an *infusé*; and Schwilgué, who has employed this term, was not deterred by the reproach of neologism, from creating a term which was necessary.—Ch. and R.

In the Latin language, the operation and the product are easily distinguished by using the terms *infusio* and *infusum*; nor in English is there any ambiguity, although the same vocable *infusion* is employed to designate both, as the distinction is sufficiently evident from the article prefixed.—(A. D.)

Solution.—The term solution has been the object of some controversies. The difficulty is referable solely to the expression. It is true that a comparison between the terms solution and dissolution has been made in some works, and by placing them thus all their differences are rendered more manifest; but in spite of all these precautions, Carbonell * observes that the most celebrated authors have confounded these terms, and consequently the operations which they represent. Solution, according to the doctrine of the day, should be the result of a mechanical, not of a chemical force. The same pharmaceutist has proposed to substitute the term *disaggregation* for the term *solution*. "Aggregation," says he, "being the union of the integrant molecules of a body, disaggregation will mean the disuniting of these same molecules;" but further on he asserts, "that this disunion not being complete and real, except when it extends to the last of these molecules, or to those of the first order, it follows that strictly the term disaggregation cannot be applied except to an operation by which a body is reduced to molecules of the first order."—Ch. and R.

I have translated the words of Carbonell instead of their sense, as given by the annotators, but the original passage is itself obscure. In another sentence his meaning is more clear. "In fact, *solution*

* Elemens de Pharmacie par le Dr Don F. Carbonell, Prof. de Chimie à Barcelone, traduite de l'Espagnole, par J. Hipp. Cloquet. 8vo. Paris, 1821. See p. 227.

requires only the division of a body into its molecules of the first order (integrant particles;) *dissolution* requires not only this separation, but also its resolution into atoms. In solution the solid and liquid do not lose their chemical and physical properties, and they form a compound in which these are to be found. In dissolution, these properties, peculiar to both, disappear, and a new compound is formed, possessed of characteristic properties different from those of its constituents."

The distinction between solution and dissolution, which is pretty generally attended to in the Dispensatory, was derived from a paper of Mr Chenevix.* There are, however, cases in which it is not easy to determine whether they belong to the one mode of action or the other.—(A. D.)

Decocta.—For designating the products of decoction and maceration, and as substitutes for the Latin words *infusum* and *maceratum*, which are commonly used, M. Chereau has proposed the terms *décocté* and *macéré*.—Ch. and R.

Decoctum aloes compositum.—The formula of the *Elixir de Spina*, *Baume de vie de Lelièvre*, extracted from the third edition of the *Corps Pharmaceutique*, enlarged by David Spina, differs much from the compound decoction of aloes. It contains theriac, zedoary, and brandy. The little analogy existing between the two formulæ constitutes them two distinct medicines, and excludes all idea of the one being an improved form of the other. —Ch. and R.

The work here referred to I do not know, but I subjoin the formula for Lelièvre's *Baume de vie*. Take of socotorine aloes and of theriac of each one ounce; of gentian half an ounce; rhubarb ten drachms; of saffron, agaric, zedoary, and myrrh, of each two drachms; sugar four ounces; and spirit of wine two pounds. †—(A. D.)

Decoctum althææ.—The root of marsh-mallow contains much starch, which is soluble in boiling water. It turns blue by iodine, and is changed into sugar by treating it by sulphuric acid. This root contains also gum.‡—Ch. and R.

Decoctum geoffreæ inermis.—It is probable that this refers to the bark of *Geoffræa*, or *Geoffroya inermis*, for this species only is mentioned in the Dispensatory. Most authors of Materia Medica speak of the *Geoffroya Surinamensis*.—Ch. and R.

It is the *Geoffræa inermis* which is officinal in our pharmacopœia. Mr P. Duguid of Jamaica first made it known in this country. §

* Upon chemical Nomenclature. 12mo. London, 1802.

† Formulaire magistral par C. L. Cadet de Gassicourt. 2de Edit. Paris, 1814. P. 12.

‡ Chimie organique, par L. Gmelin, Ineichen et Virey, p. 132.

§ Essays and Observations, physical and literary, by a Society in Edinburgh, Vol. ii. 8vo. Edin. 1770. See p. 290.

Dr Wright afterwards gave a botanical description of the tree, and a further account of its virtues. *—(A. D.)

Syrupi.—In France, apothecaries have made no use of the syrup which remains after the crystallization of sugar.—Ch. and R.

The clarification of sugar, and the art of boiling it to different degrees of dryness, to fit it for various purposes, is best understood by confectioners. The technical terms employed for expressing these are sometimes used in pharmacy, especially abroad, and therefore the following extract is taken from a book † in which they are clearly described :—

" The pan used must be perfectly clean and bright. Whisk two whites of eggs in one pint of water ; break thirty pounds of good lump sugar into small pieces, and put it into the pan ; pour over it six quarts of soft water ; set it on a clear fire or stove to melt, but be careful it does not blubber and boil before it is melted ; when you perceive it rise, it is then boiling, and must be stopped immediately, by putting in one pint of water ; when it rises again, add the same quantity of water, and so on for two or three times ; this prevents the scum from boiling into the sugar, and makes it rise to the top : draw the pan to one side of the fire, and take all the scum off ; let it continue to simmer ; keep adding a little water to make the remaining part of the scum rise ; by this time the scum will be very white and tough, which also take off. If the sugar appear clear, dip in your finger, and if a drop hang from it, it is of the first degree, called *smooth*, and may be put by for use. You may clarify a much smaller quantity of sugar by carefully attending to these instructions.

" Cover your preserving pan bottom two or three inches deep ; boil it briskly over a clear fire for a short time ; then dip in your finger, and put it to your thumb ; if, on separating them, a small string of sugar adheres to each, it is boiled to the degree called *pearled*.

" After you have ascertained that the sugar is boiled to the degree called pearled, put in the skimmer, and let it boil a few minutes, then shake it out of the sugar, and give it a blow ; if sugar fly from the skimmer in small bladders, it is boiled to the degree called *blown*.

" Continue to boil the sugar from blown for a short time longer ; take out the skimmer, and give it a jirk over the pan, then over your head, and if sugar fly out like feathers, it is boiled to the degree called *feathered*.

" Boil the sugar from the degree called feathered a little longer ; dip a stick or a piece of pipe into water, then into the sugar, and again into the water ; if it crack with the touch, it is boiled to the degree called *crackeled*.

* Philosophical Transactions for 1777, p. 507 ; and London Medical Journal, Vol. viii.

† A Treatise on Confectionary in all its branches. By Joseph Bell. 8vo. Newcastle, 1817.

"Boil the sugar still further; dip a stick or pipe into water, then into the sugar, and again into water; if it snap like glass, it is of the highest degree, called *carmelled,* and must be taken off the fire immediately, for fear of burning."—(A. D.)

SYRUPI.—Syrups are preparations of which sugar is the excipient, and in which it predominates.

After a great number of classifications, more or less happily conceived, Carbonell* divided syrups into those made by solution, and those by decoction, to which the preference is given. In a paper presented to the Société de Pharmacie on the 15th July 1822, MM. Dauzel, Duret, and Chereau,† after having passed in review the different classifications devised by authors for syrups, give the preference to this last.

They have nevertheless made a distinction between the part of the process which may be called preliminary, by which the liquids are prepared for receiving the sugar, from that which is final, and which is necessary for completing the preparation of the syrup. "We observe," say they, "that the substances intended to form part of a syrup, after having been cleaned and cut, are first converted into some product, and that it is this product which is formed into a syrup. Thus we consider infusion, decoction, or distillation, only as operations furnishing a pharmaceutical product more or less durable, and it is only from the mode of combining it with the saccharine matter, that our method of division is derived."

The union or combination of the saccharine matter in syrups takes place in two modes. If the quantity of liquid be in the due proportion to that of the sugar, a syrup by *solution* is obtained: and if, on the contrary, the quantity of liquid be in excess, it is necessary to concentrate it; from whence results a syrup by *reduction,* (boiling down.) Syrups are formed by *solution and reduction,* when it is necessary to employ both these means one after the other. Hence the following classification is obtained:—1*st,* syrups by solution; 2*d,* syrups by reduction; 3*d,* syrups by solution and by reduction jointly. It is remarked in general, that the syrups which are made by reduction are little or not at all aromatic; that they are commonly compound syrups, that is to say, they unite the medicinal principles of several substances; that they require to be clarified; that they may be prepared in the open air; that, in order to ascertain their density accurately, the use of some means of comparison, either with water, (sp. gr.) or the assistance of the areometer is required, and that they retain more extractive matter, and are more fermentable.

Syrups by solution are more sapid, more aromatic, more simple

* Elémens de Pharmacie, p. 300.

† Journal de Pharmacie, T. viii. p. 395.

in their composition. They seldom require to be clarified; they ought for the most part to be prepared in close vessels. Their density is previously calculated, and it is scarcely necessary to have recourse to a comparative measure. As they retain only volatile principles, they are also less disposed to fermentation.

Syrups obtained by both means reunited, partake of the physical qualities common to the one and the other, since each mode of preparation is successively employed. Thus each kind of syrup has very distinct characters, and there is a natural distinction between them.

This classification is founded on the mode of union or combination of the saccharine matter with the product. The mode is determined by theory and practice, and is indispensable for obtaining the medicinal principles which are wished to be preserved unchanged; for these principles must be changed in their nature, when the mode of operating is changed. It is then on a fixed base that this classification rests. It has been reduced to the simplest form, for it would be necessary to establish as many classes of syrups as there are compositions, if every difference was to be taken into account, without appreciating what there is real or essential in their value.

M. Charles Derosne has given a process for depriving syrup of colour. For this purpose make a mixture of two parts of raw sugar, and one and a-half of water; boil the mixture, throw then into it a tenth part of animal charcoal in different portions. When the effect is complete allow the syrup to remain at rest, pass it through a fine sieve to separate the charcoal, and then clarify the liquid in the ordinary manner.

Dr Macculloch says, that, by the addition of a little sulphate of potass, or oxymuriate of potass, (a salt which has no taste,) the fermentation of syrups may be prevented. *

Some objection might be made to the employment of these salts, and there is one more innocent, and which has often succeeded with M. Chereau. He has tried it on syrup of white poppy heads (*diacode.*) It is the sugar of milk, which has a sweet taste, and which is not susceptible of fermentation. The proportions are 32 to 1000 of syrup. The property which the conserve of Hamech has of keeping a long time without alteration, is ascribed by Baumé to this substance.—Ch. and R.

Syrupus althææ, *Sirop de guimauve.*—In the preparation of this syrup, we have been always directed, as in the Dispensatory, to take the fresh root of marsh-mallow cleaned, to cut it into small bits, and to boil it in a sufficient quantity of water, in three kilogrammes for example, to be reduced to two, which pro-

* Essay on Wine.

duces a viscous syrup, very susceptible of fermentation. The new French Pharmacopœia recommends a slight ebullition only.

The end proposed is to dissolve, by means of heat, the mucilage contained in the root, to which is attributed its demulcent property; but by this process the starch, which becomes soluble, is also extracted. This M. Chereau thinks useless. He prefers the following method: Take of the dried root of marsh-mallow of Nismes 6 ounces or 180 parts, cut it very small, and pour on it 4 pounds of water or 4000 parts. Allow it to macerate for twenty-four hours. The infusion thus obtained by maceration when cold has a fine amber yellow colour. It retains in a great measure the taste and smell of the marsh-mallow. It does not contain starch, which is proved by the tincture of iodine, even when added in excess. The infusion is then passed through a close white sieve, and 12 pounds or 6000 parts of white sugar are added, which is to be dissolved in a water-bath. The syrup, if necessary, is strained a second time, but after it is cold. M. Robiquet does not agree in opinion with M. Chereau (the writer of this note) on the inutility of the starch. Nevertheless, the demulcent virtue of the marsh-mallow resides entirely in the mucilage,* and mucilage is soluble in cold water. What is the use of the starch? It is for physicians to pronounce.—Ch. and R.

Syrupus Tolutanus.—M. Fremy has published† a process for the preparation of this syrup. The formula inserted in the Codex is preferred, only the balsam might be triturated with one part of the sugar when it is digested. This method was pointed out long ago by M. Desaybats, apothecary at Bourdeaux.‡—Ch. and R.

M. Fremy's process consists in dissolving 6 drachms of balsam of Tolu in the smallest possible quantity of alcohol, at 0.827, triturating carefully this solution with a pound of double refined sugar, mixing it in a silver vessel, with the white of an egg well beat up, with 8 ounces of pure water, and heating to ebullition. The alcohol is driven off, and the syrup thrown on a filter, passes perfectly colourless, and having the taste and smell of the balsam.

The process of the *Codex*, which is preferred, resembles that of the London College, while another process recommended by M. Planche§ is that of Edinburgh.—(A. D.)

Syrupus violæ.—No good explanation has yet been given of the action of pewter on the colour of violets; but it is certain that this metal deepens or brightens it in a remarkable manner. Pew-

* Baumé, 525.

† Bulletin de Pharmacie, T. ii. p. 26. 1810.

‡ Journal de la Société des Pharmaciens de Paris, Troisième année, p. 419. 4to. Paris, An. vii.

§ Bulletin de Pharmacie, T. i. p. 64.

ter vessels are therefore to be preferred for making the infusion. They must be well cleaned before they are used. Besides, according to the experiments of Charlard and Bayen, this metal is innocent. Berthollet says, that in the colouring matter of violets there is an acid which developes itself spontaneously, and that the pewter absorbs it.

The cause may be doubted, but the effect cannot be denied when the flowers are observed, by remaining in pewter, to furnish the most beautiful blue colour. The violets on being taken out of the water-bath are not even entirely deprived of their colour. After they have been lightly expressed, if a small quantity of boiling water is poured on them, a fine blue colour is still obtained, which may explain why the Dispensatories prescribe a greater quantity of water than the French Pharmacopœia.

At Paris the simple cultivated violets are preferred. Four pounds of violets bought in bunches, on one occasion gave fourteen ounces of cleansed flowers.

The syrup of violets is an example of a syrup by solution.—Ch. and R.

Syrupus rhamni.—This syrup is prepared, or has been prepared, from the juice of berries fermented and clarified, ever since M. Deyeux, in a very interesting paper,* made known this process. But is it quite certain that it is necessary to wait until the fermentation has taken place, and the juice has become vinous, and has acquired a reddish colour, whereas in its natural state it is green? In becoming red by acetic acid, formed at the expence of the mucilage, and in being freed from the mucilage, does it not lose a little of that matter analogous to resins which M. Vogel found in it, and is not its purgative property diminished? "In the fermented juice there exist no longer sugar, azotiferous matter, or in sensible quantity mucilage; but a greater proportion of acetic acid."† It is a fact that syrup of buckthorn is much less frequently used than formerly, and it may be inferred from this, that physicians have no longer found it as quick in its effects, notwithstanding what Schwilgué has said of it.‡

Besides, there were formerly employed three parts of juice of buckthorn purified, to two of sugar, with the intention of rendering the same volume more purgative. Equal parts are now prescribed. The action of the heat is no doubt to be feared, but it is probable that it was to syrup of buckthorn, prepared with its first proportions, that Sydenham, on entering his medical career, owed his success.—Ch. and R.

* Journal la Société des Pharmaciens de Paris, Première année, p. 90. 4to. Paris, An vi.

† Vogel, Bulletin de Pharmacie, Vol. iv. p. 57.

‡ Traité de Mat. Méd. Vol. ii. p. 454.

SYRUPUS MORI.—It is found that this syrup retains the smell of the mulberry more perfectly when, after having lightly mixed this fruit with the sugar in the pan, they are put together over the fire, because the odour resides in the skin of the fruit, as it does in that of the raspberry, &c. &c.—Ch. and R.

MELLIS DESPUMATIO.—For clarifying the white honies take honey ℔ vi., water ℔iss., powdered chalk ʒiij., charcoal washed, dried, calcined, pulverized, and sifted, ʒvi., two whites of eggs mixed with water ℔ i. Dissolve the honey in the water by the aid of heat; raise it to ebullition; then add the chalk little by little and stir it; remove it from the fire after it has boiled three minutes, and put in the charcoal; bring it to boil anew, and two minutes after pour in the albuminous water in three portions; shake it each time, and the ebullition being sustained for two minutes longer, withdraw it from the fire; allow it to cool; filter it through flannel until it pass colourless. The residuum washed with warm water serves for a new operation.

By this treatment of honey with water, charcoal, and chalk, a syrup is obtained, as clear and colourless as that of sugar, and which is not inferior to it in quality; a little of that taste, however, which honey contracts from heat, is always to be recognized in it. This is the only difference between them, but it exists even when honies of the first quality are employed. Lowitz was the first who made this syrup; and his process has been followed all over France. 280 parts of honey treated in this manner yield 265 of syrup.

Purification of yellow honey, (*Miel de Bretagne.*)—Take common honey ℔x., powdered vegetable charcoal ʒx., animal charcoal ʒv., nitric acid, sp. gr. 1285, or muriatic acid ʒx., common water ʒx. Triturate in a porcelain mortar the two charcoals with the nitric acid and the water; add the honey; put the whole into a tinned pan; leave the mixture on the fire for eight or ten minutes without allowing it to boil; then add 50 oz. of milk; boil it four or five minutes; withdraw it from the fire; pass it through a straining-bag in a warm place; return what first passes if it be not clear enough. The acid in this operation combines in part with the charcoal, and in part with the caseous matter of the milk. This process is by M. Borde, apothecary at Paris.*—Ch. and R.

MEL ROSÆ.—In none of these three receipts is any notice taken of the calices of the roses, and their omission may be approved of, for they prevent in a singular manner the clarification of the honey, or *mélolé*, (new Nomenclature.) The quantities of rose leaves and water for the infusion which the Dispensatories

* Bulletin de Pharmacie, T. iv. p. 410. 1812.

employ, differ much from those prescribed by our Pharmacopœias,* viz. 500 of roses and 2000 of water; but this proportion of water is not sufficient for that of the rose leaves, which absorbs the whole. It requires at least 3000, and of the rose leaves 375 may suffice, for the rose leaves resemble in this property the flowers of the violet, that they are never entirely deprived of their colour on being taken out of the infusion. The proportions of the Portuguese and Swedish Pharmacopœias are, rose leaves 250, water 1500, pure honey 3000. The Genoese Pharmacopœia prescribes a still smaller proportion of rose leaves, &c. &c.

For this preparation a fine honey must be chosen, and a greater quantity of white of eggs employed, than for a syrup made with sugar. There has been a change of opinion with regard to this honey, and what are called oxymels, (*oximélolés*, new Nomenclature.) For example, it is proposed to filter the infusion of roses, to dissolve in it the clarified honey by the heat of a water-bath, in sufficient quantity to give the *mélolé* at once its proper consistency, and to filter it in a steam-bath, or in Josse's funnel. MM. Boullay and Etoc-Demazy have examined this oxymel.* The former recommends for these preparations the employment of a vinegar concentrated by freezing to a known degree of strength; and the latter to make the solution of the honey without heat, but this requires some consideration.—Ch. and R.

Medicated vinegar.—According to the proposed nomenclature, medicinal vinegars are called *oxéolés*, and form the seventh order of chronizoic medicines. Distilled vinegar will be an *oxéolat*, and this term, being admitted into pharmacy, would supersede those of acetous acid, weaker acetic acid, and acetic acid diluted with water, given successively to distilled vinegar, and would put an end to that ambiguity of names which always exists between that preparation and concentrated acetic acid or radical vinegar. —Ch. and R.

Acidum aceticum aromaticum.—Into the composition of the *vinaigre des quatre voleurs*, (oxéolé d'ail,) nutmeg and the great and small wormwoods, but, above all, camphor and garlic, enter. As this last has always been considered as the active principle of the composition, we cannot consider its exclusion, (by the British colleges,) as an improvement.—Ch. and R.

I subjoin the formula inserted in the last French Pharmacopœia, for the preparations of the *Acetum aromaticum alliatum* seu antisepticum. "Take of the dried summits of *Artemisia absinthium*, of *Artemisia Pontica*, of rosemary, of sage, of *Mentha aquatica*, of rue, of lavender flowers, of each 64 parts; of garlick, sweet flag root, cin-

* Baumé, Elemens de Pharmacie theorique et pratique, and the New Codex.
† Journal de Pharmacie, T. i. p. 66.

namon bark, cloves, nutmeg, of each 8 parts; best red vinegar 4000 parts; macerate in a well-closed matrass for fifteen days; strain, with strong expression, filter through paper, and add of camphor dissolved in a sufficient quantity of alcohol, of acetic acid, sp. gr. 1075, of each 16 parts; keep in a well closed vessel. The proportion of the solvents to the vinegar is a little below one-eighth." This differs from the British preparation, not only in the greater number of ingredients, but still more in being made with best vinegar instead of the very volatile and pungent acetic acid.—(A. D.)

TINCTURÆ.—It has already been said that this term *tincture* ought to be abandoned. Pharmacologists never employ it without dissatisfaction. The word *tincture* means a *liquor prepared for dyeing*, and this certainly is not the object of our medicinal tinctures; we should therefore have recourse to that much more simple and real term *alcoholé*. The name *éthérolé* is given to etherial tinctures, which contain also resin and caoutchouc, as the *éthérolés* of castor, of arnica, &c. It will then be easy to distinguish tinctures of the same substance made with alcohol and ether, such as those of hemlock and digitalis. The alcoholic tincture of this last will be the *alcoholé* of digitalis, and its ethereal tincture the *éthérolé*.

For the alcoholés an alcohol is taken, of which the strength may be adapted to the substances of which the tinctures are to be made. Alcohol at 847 is proper for resinous substances, as benzoin; at 868 for resinous extracts, as myrrh and assafœtida; at 923 for what are called extractive principles.

The heat applicable to this kind of operations, is fixed between the 28° and 30° Reaumur, (95° and 101° Fahr.)

It was necessary to recapitulate these data, in order to be able to appreciate the formulas given in the Dispensatory, for the preparation of tinctures.—Ch. and R.

ALCOHOL.—Proof spirit, rectified spirit, strong alcohol, dilute alcohol, are the different denominations of which the Dispensatory makes use with regard to alcohol.

Strong alcohol and rectified spirit are the same, of which the specific gravity ought to be to that of water as 835 to 1000, according to the Colleges of London and Edinburgh, and 840, according to that of Dublin.

Proof spirit is the preceding strong alcohol, mixed with an equal quantity of water. Its specific gravity is to that of distilled water, as 935 to 1000, (930 London and Dublin. *)

Four parts of strong alcohol and three parts of distilled water are also employed in the preparation of *alcoholés*, tinctures.

* In the Dublin Pharmacopœia 1826, it is 923 at 51° Fah., or 919 at 60°, and it is stated that it may be made by mixing 5¼ parts by measure of rectified spirit with three parts of distilled water.—(A. D.)

The diluted alcohol of the Edinburgh College is a little weaker than that of the two other colleges. It is probably the weak spirit of wine; in fact it may be remarked that it is only employed for the officinal tinctures of the Edinburgh College.—Ch. and R.

Tinctura camphoræ.—This is another instance of the misapplication of the word tincture. If this term in ancient Pharmaceutic language meant to express a liquid charged with colouring particles, how could it apply to this, a preparation which is colourless, to that of copaivi, &c. &c. ?—Ch. and R.

Tinctura cantharidis.—The active principle of cantharides, or *Cantharidine*, being more soluble in alcohol than in water, alcohol, $\frac{5}{6}$, ought always to be employed for this tincture, and the more so, that this active medicine is applied by friction. Reduced, to use the expression, to a state of vapour, it must penetrate even to the muscular and nervous tissue, that it may disperse the matter which is the cause of the pains or deadness, and that it may restore to the inert parts sensibility and vigour. The English often employ the tincture of cantharides to stop running from the urethra, such as in gonorrhœa when the flux is very abundant and of very long standing, and when it is feared to be too weakening. Sanchez, physician to the Empress of Russia, has left the following formula for the same object: ℞ Pulverized cantharides ʒij., rectified alcohol lbiss. Allow it to digest for two days, strain; add to the filtered solution balsam of copaivi ʒiss., cochineal ʒi.; set it again to digest for four days, and filter for use. It is given in the dose of from 12 to 15 drops in a mucilaginous drink of barley or marsh-mallow, sufficiently thick. The dose of this tincture is to be augmented to 20, 24, and 36 drops, (ʒss.)—Ch. and R.

Tinctura cinchonæ.—Since the treatises of MM. Pelletier and Caventou on quinquina have been published, we are in possession of principles for making the pharmaceutical preparations, and we know what description of alcohol we should take for the tincture of cinchona; it is the strong alcohol $\frac{5}{6}$. The tincture of cinchona thus prepared contains all the active principle of that bark, that is to say, the organic salifiable base which it contains united with an acid, colouring matters and a little fatty matter; but there is not to be found in it either gum, starch, or kinate of lime.* According to this increased knowledge, the formulas of the Dispensatory require to be modified.—Ch. and R.

Tinctura croci.—The French pharmacopœia, however, prescribes the use of alcohol at 32°, (rectified alcohol,) and it is the proper menstruum; the colour that the tincture obtains is more

* Journal de Pharmacie, T. vii. p. 120. 1821.

durable, and it does not allow nearly so much red matter to be deposited as when a weaker alcohol is used for its preparation.*—Ch. and R.

TINCTURA HELLEBORI NIGRI.—Black hellebore root contains a very abundant resinous principle; proof spirit is therefore not proper for making this tincture. It is alcohol at 32° Baumé (rectified spirit) which should be used.—Ch. and R.

TINCTURA HUMULI LUPULI.—This is the proper place to review the latest investigations on the subject of hops, and which should have been introduced before, (in the observations on the Materia Medica.)

In 1811, M. Planche† published that the extract of hops contained nitrate and hydrochlorate of potass. In 1813, he extracted from the yellow powder of hops from 60 *per cent.* of pure resin, a little sebaceous oil, a bitter substance. He then proved that the active principle of hops resided in the yellow powder. In fact, when the calycinal leaves are deprived of it, they are deprived of their smell also. They are but feebly bitter, and no longer afford to alcohol any resin. Dr Yves, physician at New York, has also published an analysis of hops,‡ and designated in his paper the yellow powder under the name of *Lupulin.* In 1822, MM. Payen and Chevallier published a very elaborate paper on hops, its culture in France, and its analysis.§ They further established that the yellow grains contain, besides the bitter principle and the resin, carbonic acid, traces of osmazome, of gum, and of silex.

Lupuline is to hop, according to the opinion of M. Planche, what quinia is to cinchona, strychnia to nux vomica; but he has not placed it in the rank of alkalies. It is aromatic, tonic, and narcotic, and might be of great assistance in weakness of the stomach, and in those symptomatic diseases followed ordinarily by a weakened excitability. In many cases lupuline provokes sleep, and appeases excessive nervous irritation, but without causing costiveness, or diminishing the tone of the stomach, thus augmenting the primary malady, as opium does. M. Planche thinks that pills are perhaps the only form that it is proper to employ in order to appreciate the effects of this principle.

Dr Frank recommends an ointment prepared with this powder and axunge against cancer in the last stage of that disease, when

* Pharm. Gallica. 4to. 1818, P. 120.

† Manuel des plantes usuelles et indigenes, par D. Loiseleur-Deslongchamps. Paris, 1819. See T. ii. p. 503. Also Cours de Matière Medicale, par D. Hanin. Paris, 1819. See T. i. p. 353. Formulaire pharmaceutique des hopitaux militaires, par M. Laubert. Paris, 1820. See p. 54. Journal de Pharmacie, T. viii. p. 228.

‡ Annals of Philosophy, 1821.

§ Journal de Pharmacie, T. viii. p. 209.

the pains are very intense, and other means have proved without success. The following is the formula preferred by M. Planche for that ointment. Take of lupuline bruised one part; fresh lard three parts. Heat them by a water-bath in a close vessel for six hours; strain; allow it to cool; scrape off a slight sediment; liquefy it anew, and pour off. This ointment when cold has a fine yellow colour, and perfectly retains the smell of hop.

But it is on another account that the properties of lupuline are to be tried. If it be true that in London the inhabitants are less subject to stone in the bladder, since they have been accustomed to add hops to their beer; and if the other observation of Lobb * inserted in the Dispensatory be true, that a large stone had been softened by a decoction of the cones of that plant, it is in another point of view that the properties of lupuline are deserving of a trial.—Ch. and R.

Lupuline is by no means to be considered as analogous to quinia or strychnia, but rather to be ranked with the gum-resins. It is an organic secretion composed of several different principles which can be separated from each other. As, however, containing the active principle in a concentrated form, and being easily separated from the leafy calyx, whose bulk renders it inconvenient, it is well deserving of a trial.—(A. D.)

Elixir Paregoricum.—The subject of paregoric elixirs has given rise to two notes by M. Chereau. † By these it appears that there exists (in Britain) a paregoric elixir entirely different from that of London. It does not contain camphor, and has for its excipient ammoniated alcohol. It is the *Tinctura opii ammoniata*, Ed.; but the formula (in the tenth edition of the Dispensatory) prescribes 4 grammes of opium, (1 gramme) more. However, that transcribed by M. Chereau was taken from the sixth edition of the Dispensatory; and it has been found to agree with the anterior editions of 1742 and 1746, published at Bremen; and is similar also to the formula given in the Prussian and Danish Pharmacopœias of 1821, and the Batavian Pharmacopœia revised by Niemann of 1811.

Three kinds of laudanum are known in France; and it is very important that these three preparations be well understood.

1*st*, The *Laudanum opiatum*. This is the dry extract *(opostolé sec)* of opium.

2*d*, The laudanum of Rousseau, *Opium de Rousseau;* (opiate wine prepared by fermentation, Codex) *(œnolé d'opium*, Ch.)

3*d*, The liquid laudanum of Sydenham, (Compound opium wine, Codex) *(œnolé d'opium et safran*, Ch.)

* De Dissolv. Calc. p. 106.

† Journal de Pharmacie, T. ix. p. 350; and T. x. p. 157.

Besides these three preparations, there yet exists among us the thebaic tincture of opium, according to some authors an alcoholic preparation which is intended to contain the whole of the resinous part of opium, and for making which very strong alcohol is employed. (*Alcoholé d'opium*, New Nomenc.) We may add the tincture of the watery extract of opium of the new French Pharmacopœia. The tincture of opium of Bamberg inserted in some French works * is not used in Paris.—Ch. and R.

I regret that an error of mine has given rise to part of this note. In the ninth edition of the Dispensatory, the quantity of opium to be taken in the preparation of the ammoniated tincture of opium, (Scotch paregoric elixir,) was by mistake omitted, so that it appeared as if the same quantity of opium, as of the saffron and benzoic acid, was to be taken, or *three* drachms instead of *two*, which it should have been. This error escaped my notice until after the tenth edition was published. It is corrected in the eleventh.

In Britain the term of laudanum is restricted almost exclusively to the tincture of opium; but on the Continent it is applied both to solutions of opium of different kinds, and also to the extracts prepared by evaporating them. It may not be superfluous to subjoin the formulæ for some of those mentioned by the annotators.

1. Extractum opii vino paratum *seu* laudanum opiatum. Take of select opium cleaned, any quantity, of white wine enough (?) to dissolve the opium. Dissolve by the heat of a water-bath; express the solution strongly through close linen; then carefully decant the liquor from the sediment permitted to settle, and evaporate it in a water-bath to the consistence of an extract. (French Codex.)
2. Vinum opiatum fermentatione paratum, *dictum* guttæ, *seu* laudanum abbatis Rousseau. Take of fine honey twelve ounces; boiling water three pounds; dissolve the honey in the water, and place the solution in a warm place; when it begins to ferment, add of select opium four ounces, previously dissolved in twelve ounces of water; allow these to ferment together for a month in a place whose temperature is 86° Fahr. Filter through paper, and evaporate until twelve ounces be left; filter again, add of alcohol sp. gr. 0.868, four ounces and a half; keep in a close vessel.—*N. B.* If it be desired to hasten the fermentation, this may be done by adding to the solution of honey a drachm of beer-yeast. In the preparation, when completed, if reference be made to the extract and not to the whole opium, the proportion of extract to the whole opium is as 1 to 7.05. But as twenty drops of this liquor, which is much thicker than Sydenham's laudanum, weigh 22 grains, twenty drops contain three grains of opium in solution, and these seven drops correspond to one grain of opium.

Laudanum liquidum Sydenhami. Take of Spanish wine one pound; of opium two ounces; of saffron one ounce; of powdered cinnamon and cloves, of each one drachm. Infuse in a water-bath for two or

* Chortet, Manuel de Pharmacie moderne.

three days, until the liquor acquire the due consistency. Filter and preserve for use. *

Tinctura Thebaica Bambergi; Tinctura opii Eccardi. Take of opium two ounces; cloves one drachm; cinnamon water eight ounces; spirit of wine four ounces. Digest in a warm place for six days, express the liquor and filter. One drachm contains ten grains of opium, which gives a grain of opium in ten drops. †

It would be out of place to enumerate all the preparations of opium. Many of these have originated from accident or caprice. Few have been the result of scientific principles. It will, however, be instructive to take a general view of them according to the knowledge of the present times. From the chemical nature of the principles which enter into the composition of opium, its preparations must differ considerably, according to the nature of the menstruum by which it is treated. 1. *Water* dissolves all the active principles, except perhaps the resin; but a large quantity of the menstruum is required, and these preparations quickly mould, and are therefore never officinal. 2. *Alcohol* dissolves the active principles in larger quantity, and is employed for the formation of officinal tinctures of greater or less concentration. 3. *Wine* may be considered as dilute alcohol, combining the powers of alcohol and water. It also probably acts partly by the free acid which it always contains, and hence the opiate wines may possess increased powers compared with the tinctures. 4. *Ether* dissolves the narcotine, but not the salt of morphia, on which the virtues of opium depend, and is therefore unfit to be employed as a menstruum. 5. *Acids.* The active principles of opium are more soluble in dilute acids, both mineral and vegetable, than in the preceding menstrua, and many preparations of this kind have at different times been introduced. Glauber prepared an extract of opium by digesting 4 ounces of opium, $1\frac{1}{2}$ ounce of muriatic acid, and 1 ounce of cream of tartar, along with spirit, and distilling off the spirit. The acetic acid is now more frequently employed, either ready prepared before it is applied as a solvent, or generated in contact with the opium. In the new Dublin Pharmacopœia there is an *Acetum opii.* Take of Turkey opium four ounces, distilled vinegar one pound. Triturate the opium into a pulp with a little of the vinegar; macerate the mixture in a close vessel for seven days with frequent agitation; pour off the supernatant liquor and strain. It is stated to be ascertained by evaporation that each drachm of this solution contains seven and a-half grains of extract, and that twenty drops are equal to thirty of the tincture. The Extractum opii fermentatione paratum, according to the process of M. Deyeux, (Cod. Gallic.) Rousseau's laudanum already described, the Lancaster black drop, and perhaps Battley's sedative liquor, have acetic acid for the solvent. Citric acid is used for preparing an extract of opium in the Wirtemberg Pharmacopœia; and Dr Porter of Bristol has given to a

* Thomæ Sydenham, M. D. opera universa. 8vo. Lugd. Bat. 1726. See p. 185.

† Pharmacopœia Batava. Editore D. J. F. Niemann. 8vo. Lipsiæ, 1811. T. i. p. 458.

solution of opium (ʒiv.) in water (Oct. 1,) acidulated with citric acid, (ʒij.) the name of *Liquor morphiæ citratis*. 6. *Alkalies*. From the property which alkalies possess of throwing down the morphia from watery solutions in the state of an insoluble precipitate, it is evident that the addition of any alkali diminishes the solvent power of the menstruum, and is therefore injudicious. It is true that the morphia itself is soluble in strong alcohol, and, therefore, from a tincture made with it no precipitate occurs on the addition of an alkali; but the precipitation takes place when the strong tincture is diluted. The *tinctura opii ammoniata* of Edinburgh is therefore objectionable. The same censure does not apply to the *Magisterium opii Ludovici*, which is in fact an impure mixture of morphia and narcotine. It is prepared by dissolving opium in vinegar, straining off the solution, and adding a solution of potass until no more precipitate take place. This is then to be dried and kept for use.—(A. D.)

Acidum sulphuricum aromaticum.—If this formula is intended to be what was formerly called *Elixir vitriolicum Mynsichti*, it contains much fewer active ingredients. It has not the cubebs, the nutmeg, the *Lignum aloes*, the *Melissa calamintha*. Besides the strength which the alcohol ought to have is not shown. The new French Codex makes it 0.923 sp. gr. This preparation cannot with propriety derive its name from the acid, which, by reacting on the alcohol and on the vegetable substances, is modified. It is the *Tinctura aromatica cum acido sulphurico* of the French Codex, the *Acoholé de calamant avec l'acide sulphurique* according to the new nomenclature.—Ch. and R.

I cannot agree with any of these observations. In the *first* place, I do not consider the omission of a portion of the numerous aromatics which entered into the original multifarious formula of Mynsicht, as at all influencing the virtues of the medicine; 2*dly*, The strength of the alcohol is distinctly indicated, being sp. gr. 0.835, the *alcohol fortius* of the Edinburgh College; 3*dly*, It is properly named from the acid; for by repeated experiments by means of Mr Ker's ingenious bent tubes, I have ascertained that there is no reaction upon the sulphuric acid, at least that not a particle of gas is evolved by the mixture of alcohol and sulphuric acid in the proportions indicated. I have not tried it with the aromatics. In the practice of medicine, its effects are identical with those of dilute sulphuric acid. The formula inserted in the French Codex differs also from the original receipt of Mynsicht,* which I subjoin:—*Elixir* Vitrioli. ℞. Galangæ min. ʒiss.; Calami aromati, ʒi.; menthæ crispæ, Salvice acut. ā ʒss; Cinamonii elect. Caryophyllorum, Zingib. alb. ana ʒiij.; Nuc. moschatæ, Cubebiorum ana ʒij.: Lig. aloes pond. Cort citri ana ʒi. Mix and powder; add of white sugar-candy ʒiv.; then moisten

* Thesaurus et Armamentarium medico-chymicum. 8vo. Francofurti, 1575. See p. 269.

with the best spirit of wine, so that the mixture has the consistence of honey; put it into a glass phial, and pour upon it of oil of vitriol from blue or green copperas, (*ol. vitrioli veneris aut martis,*) or for want of these, of spirit of vitriol several times rectified, to the depth of four inches; digest for three or four weeks; pour off the tincture and filter. Upon the residuary matter left in the bottom of the glass, pour spirit of wine, and extract the essence according to the spagyric art. Lastly, in order to give greater efficacy, circulate in a water-bath for fourteen days, and preserve for use.—(A. D.)

Spiritus ammoniæ succinatus.—The milky opacity of *Eau de Luce* depends on the oil of amber, which ought to be well rectified, and on the strength of the ammonia, which ought not to exceed sp. gr. 0.935. Notwithstanding these precautions, it still happens that it loses its opacity. The French Pharmacopœia proposes the addition of a little soap of almond oil, probably to augment the proportion of soap, *(savonule.)* In other receipts the alkali is increased by the addition of a little subcarbonate of potass. In regard to its use, *Eau de Luce* is not employed internally, which might be dangerous on account of its pungency. It is a powerful stimulant in faintings, apoplexy; but it is not to be conceived well how the formula of the Dispensatory can furnish an analeptic remedy. It must be an error of expression.—Ch. and R.

The term analeptic, I must admit, is not correctly applied. It properly means restorative; but it has been vaguely employed to mean diffusible stimuli, such as ammonia and acetic acid, which restore from languor and fainting. Thus Cullen * says of this class of remedies: "Medicines suited to restore the force of the body when lost, and sometimes employed with respect to stimulants, but more commonly with respect to those substances which supply a defective nourishment. As a term, however, attended with some ambiguity, it should not be employed at all."—(A. D.)

Vina Medicata.—Wine ought only to be macerated on medicinal substances. When it has answered the purpose of an excipient, it certainly differs from what it was at first. This is the case with all bodies considered as excipients. From their original state of water, wine, &c. they pass into quite another state, in consequence of this conversion. They acquire new principles by reason of the bodies they dissolve, and by the effects of diverse processes which are applied to them. Lastly, they change their physical properties for new properties, which constitute them medicines, and which, for the most part, prevent them from being restored to their primary condition. It is this which has occasioned the proposal of applying to medicinal wines the term, first

* Treatise of the Materia Medica, Vol. i. p. 166.

of *oinolé*, and subsequently, of *œnolé*, according to the suggestion of M. Henry.

Parmentier has proposed, it is true, to add to any generous wine an alcoholic or hydralcoholic tincture, * of the substances of which a medicinal wine is wished to be made. † But this author, whose memory can never perish, at first suggested this process only for the preparation of medicinal wines in quantity, for military hospitals: and in this respect his method possessed numerous advantages; for in these establishments, often moveable, there is a want of time and of good wines. It was necessary to supply this want; and Parmentier's idea was useful.

But this is not the case in civil practice. Here every facility exists, and there is nothing to prevent medicinal wines from possessing all their requisite properties.

The method of Parmentier is only adapted to chalybeate wine, and in general the receipts of the Codex ought to be followed. We must remember, nevertheless, with regard to the wine of wormwood, that M. Boudet has given a process which consists in triturating the dried summits of wormwood with white wine in a marble mortar for ten minutes, and then expressing and filtering it. The proportions to be employed are, Chablis wine a half litre, wormwood 32 grammes. This wine, saturated with the aromatic bitter principle, is said to keep well.—Ch. and R.

The London College, in the last edition of their Pharmacopœia, has been guilty of singular solecisms in regard to the medicated wines. They have rejected the use of wine altogether in Pharmacy, and even expunged it from their Materia Medica, but have retained the title. They have *Vinum aloes, V. ipecacuanhæ, V. veratri, V. colchici, V. antimonii tartarisati, and V. ferri*, which contain no wine; and, most unaccountably, the tartar-emetic wine, which was called *Liquor ant. tartar.* when it was made with wine, is now called *Vinum* when it contains none.

I may take this opportunity of supplying an omission in the last edition of the Dispensatory, by now inserting the London formula for *Vinum Colchici*. "Take of recent seeds of meadow saffron one pound; proof spirits four fluid-ounces; distilled water eight fluid-ounces; macerate for fourteen days, and filter."—(A. D.)

Extracta.—The progress of scientific chemistry has removed every thing vague and faulty from the classification of extracts. M. Recluz has founded an arrangement on their most active constituent principle ascertained by analysis, and of which the effects are evident. This attempt is creditable to its author. ‡

* Hydralcohol is brandy which does not exceed 22° of the areometer of Baumé, 12° of the Batavian scale, (sp. gr. 0.923.)

† Code Pharmaceutique, p. 365, 3d edition.

‡ Journal de Pharmacie, T. ix. 1823, p. 78; see also the Report of M. Henry, Seguin, and Chereau, p. 76 of the same volume.

M. Recluz divides extracts into six sections as follows :—

1*st*, The *alcalidés*, which are the extracts of the cinchonas, papaveracées, strychnées, solanées, which contain a kind of alkali, (*alcaloïde*, Brande.)

2*d*, The *resinidés*, which owe their properties to a resin, such as the extracts of jalap, turpeth, colocynth, guayac, &c.

3*d*, The *amaridés*, which owe theirs to a bitter or an analogous principle, such as that of gentianine, rhabarbine. They are subdivided into three kinds; 1*st*, the *amaridés* properly so called; 2*d*, the *cathartinés*, as the extracts of senna and of purging buckthorn; 3*d*, The *tanninés*, as the extracts of bistort and tormentil.

4*th*, The *saccharidés* are those of which the properties depend on immediate principles of a bland and saccharine nature. Extracts of liquorice, dandelion, polypodium, juniper.

5*th*, The *osmazomés* contains a single extract, that of flesh, *tablettes de bouillon*, which owes its properties to osmazome and gelatine.

6*th*, The *polydiotés*. In this section M. Recluz has placed all the extracts which cannot be properly ranked, for want of knowing to which principle they owe their properties, such as those of borage, of sarsaparilla, of cynoglossum, &c.

For the word *osmazomé*, that of *animalisé* might perhaps be substituted; this section then would include all the inspissated biles of animals.—Ch. and R.

Extracta.—The knowledge which has been recently acquired on the preparation of extracts, prohibits the subjection of bitter substances to a long decoction; for it is shown that by maceration and infusion the products are better and even more abundant. This is the result of the experiments of MM. Baget, Blondeau, and Guibourt. * For a long time M. Henry has taught this truth in the numerously attended lectures which he annually gives at the Central Pharmacy. From repeated experiments on extracts, M. Orfila has also established this kind of axiom, that the virtue of these compounds was in an inverse ratio of the temperature to which they had been subjected.—Ch. and R.

This assertion requires some limitation. Extracts of expressed juices, which have in no period of the process been subjected to a heat sufficient to coagulate the albumen, do not keep well. It is therefore better, even when the solution is made by infusion, to heat the infusion for a little to the boiling point, or at least 160° F., in order to coagulate the albumen, and then to finish the evaporation *in vacuo*, or at a lower temperature.—A. D.

Extracta.—There are many different methods of evaporat-

* Journal de Pharmacie, T. ix. for 1823, p. 283.

ing extracts; 1*st*, *in vacuo;* 2*d*, by the stove; 3*d*, by the water-bath; 4*th*, by steam.

Mr Barry has described a method for preparing extracts *in vacuo*, and he gives the description of an apparatus proper for that purpose. * It is certain that the presence of air may have some influence on the properties of extracts.

The second process, which consists in distributing the juices of active plants (on dishes) in the stove at a temperature of 100° to 120° F. is perfectly adapted for preparing extracts in the manner of Störck, that is to say, for those with which chlorophylle is incorporated.

Mr Battley, chemist in London, has discovered a method of preparing narcotic extracts, by which he succeeds at once in preserving both the green colour and the medicinal properties of vegetables. Plants which, from circumstances, cannot be operated on immediately on being gathered, must be refreshed by immersing their stalks in water for twelve or eighteen hours. Such as are revived perfectly by this means, which is known by their leaves becoming as fresh as in their natural growing state, must be beat and submitted to pressure. The juice which is obtained must be passed through a fine sieve, and placed immediately afterwards upon the fire. Some time before it has attained the boiling temperature, a certain quantity of green matter begins to float on the surface of the liquid. This matter in the juice of some plants is in very considerable quantity. It is to be carefully removed by means of a thin perforated tin dish. At the moment when the juice begins to boil, or a short time after, the green matter ceases to appear. The boiling must be continued until rather more than half of the fluid be evaporated; the decoction is then to be put into a conical pan, and allowed to rest until it be cold. It is then found that an abundant deposit of feculent matter of a dark green colour has taken place. The supernatant liquor above this deposit must be poured off, and submitted anew to evaporation until the half of it be consumed. It is afterwards allowed to remain quiet, that the precipitation may take place. The matter deposited by the second evaporation is not nearly so green as that of the first. The remaining fluid is now to be suffered to boil until it acquire the consistence of a syrup; when the matter collected at the commencement by filtration and precipitation is to be mixed with it; and the whole placed in a water-bath in a metal basin, in which the evaporation is to be continued until it has acquired the consistency of an extract. The operator ought to pay the most constant attention to this last part of the process until it be finished. It is not necessary that the

* Journal of Science and the Arts, Vol. viii. p. 360. See also Medico-Chirurgical Transactions of London, Vol. x. p. 231.

matter should be constantly stirred, but it ought never to be allowed to attach itself to the sides of the vessel; for if it be allowed to harden there, the extract will lose its green colour, and its medicinal virtues will be deteriorated. *—Ch. and R.

Extractum opii aquosum.—A great many processes have been contrived for this extract. Some propose to deprive the opium of its virose principles by means of alkalies; others by acids; others by alcohol, wine, charcoal, &c. &c. The French Pharmacopœia retains four only of these processes. The first is that of Cartheuser, as modified by Crohare; the second belongs to M. Deyeux; and the third, by long digestion, is that of Dr Diest; for the fourth, wine must be employed as the menstruum. The authors of our French Codex, who legislate in these matters, have not given any opinion concerning the relative superiority of any of these extracts of opium. It is left to the choice of individuals, and it is inconvenient that this latitude should be given to apothecaries, when the physician in his prescription has not expressly indicated any of them; for how is the identity of the medicine to be depended upon, which ought to be the same in all shops since there is a pharmaceutical code imposed by law?

The process of Josse, amended by Bucquet, has, for some years past, had the reputation of furnishing the best composer and the mildest hypnotic. It is also that preferred by practitioners. It consists in kneading a piece of opium under a jet of water. There remains in the hand the glutino-resinous substance of the opium; the solution is then filtered and evaporated in a water-bath. This extract still contains some resin, but it is far from having the virous smell of other extracts of opium.

Quince or lemon juice has been much used, in the manner of Langelot and Reuss,† for the preparations of opium, and the efficacy of vegetable acids may be easily explained by what is known of the action of acetic acid upon morphia. It is without doubt to the formation of the acetates of morphia, that the celebrity of the preparation of opium may be ascribed, which has been known for more than a century in England, under the names of black-drop, Lancaster black-drop. The formula for its preparation was published by Dr Armstrong.‡ "The black-drop was originally prepared upwards of an hundred years ago by Edward Runstall, a medical practitioner of Bishop's Auckland, in the county of Durham."—"Take half a pound of opium sliced; three pints of good verjuice; one and a half ounce of nutmegs; half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonfuls of yeast.

* London Medical Repository, Vol. iv. 1815. See p. 198.
† Dispensaire Universel, p. 44.
‡ Practical Illustrations of Typhus Fever, 2d edit. 1818. P. 183.

Set the whole in a warm place near the fire, six or eight weeks, then place it in the open air until it becomes a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle."

Dr Anthony T. Thompson* in reference to this preparation, has the following remarks: "It evidently owes its efficacy to the *acetate of morphia*, which is formed by the verjuice decomposing the codeate of the opium. The acetate itself is a more elegant preparation; and produces its effects in doses $\frac{1}{6}$ of a grain. There is also some reason for thinking that another preparation of opium, the *Liquor Opii Sedativus* of Mr Battley, of Fore-Street, London, which has been justly esteemed one of the best preparations of the drug hitherto discovered, owes its efficacy to the acetate of morphia. The mode of preparing it is as yet kept secret; but I know that the whole of the resinous part of the opium employed is separated and rejected; and I am inclined to believe that acetic acid is employed to separate the gummy part. Dr Paris (*Pharmacologia*) states as an objection to this preparation, that it undergoes some important change on being kept. Justice obliges me to say, that my experience does not allow me to concur in this remark. I used the remedy before it was sold to the profession, and gave it the name it bears; and although I have since constantly prescribed it, and kept the preparation in rather a warm situation, yet I have not observed the change of which Dr Paris has spoken."

The formula for this preparation has been literally transcribed. It would appear that when the observations of Dr A. T. Thomson were made, it was not known that the existence of the Codeates had not been confirmed.† M. Robiquet, in a note read to the Royal Academy of Medicine, the first October following, showed that these salts were in reality muriates.‡

It is, however, suspected that opium contains another acid besides the meconic, by the tendency which its liquid solutions have to redden vegetable blue colours. It is possible that this effect is owing to the presence of meconate of morphia with excess of acid; but in the contrary case, the presumed acid would differ from the meconic in not being volatile, and not producing particular effects with the salts of peroxide of iron.—Ch. and R.

Opium purificatum.—Extracts very frequently undergo changes by keeping. Those of opium are not so subject to mouldiness as those of borage, cinchona, hemlock with chlorophylle, &c. &c. This is owing to their containing deliquescent salts, such as the acetates of potass and of lime, which attract the

* The London Dispensatory, 4th edition. 1826. P. 466.
† Journal de Pharmacie, T. xi. p. 365.
‡ Journal de Chimie Medicale, T. i. 1825. p. 461.

humidity of the atmosphere. They also contain an animal (azotized) matter which accelerates their putrid fermentation. It has been proposed to cover their surface with a powder, such as the lycopodium, to envelope them in oiled bladder, or to pour some rectified spirit upon the very soft extracts. This is one of the rules prescribed by the London College. They must be kept in vessels proportionate to their quantity, well tied up, and they must be preserved in dry presses.—Ch. and R.

Extracta resinosa.—There is no other agent that can be preferred to alcohol for the preparation of resinous extracts. It is true that alcohol is dearer in England than in France, which may explain the reason of that parsimony with which English apothecaries are reproached; still, however, the quality of the medicine must suffer from it, for previous to the discovery of alkaloïdes, the gummy and resinous extract of cinchona was without doubt the preparation which retained most of the active principle under the least volume. This observation may be applied to all mixed extracts, or of the same nature.—Ch. and R.

Pulveres.—After resinous substances have been well triturated, some intermediate substance is used for suspending them in liquids, and they do not form lumps even in liquids which are not thick.

With regard to powders, Mr Battley of London has proposed the following method of drying narcotic plants destined for pulverisation. *

"Previous to the process of drying the leaves of plants, the same rules must be carefully observed in reviving them which were recommended previous to their being pressed for extracts.

"The leaves, being in a high state of preservation, and entirely freed from the stalks, and as much as possible from external moisture, must be laid in thin layers in baskets of willow stripped of its bark, in a drying room from which the light is quite excluded. They should be then exposed to a temperature of not less than from 130° to 140° of Fahrenheit's thermometer for three or four hours, or until the leaves begin to shrivel. They are then to be turned in the same temperature, and the heat kept up for six or eight hours longer, when the operation is generally finished; which is known by the leaves crumbling without much difficulty in the hand. If the process has been in all its parts properly managed, the result will be, that the leaves retain a beautiful green colour, and, also, in a high degree the medical properties of the plant to which they belong."

For preserving them in this desirable state, it has been found

* Medical Repository, Vol. iv. 1815, p. 198.

the most convenient vessels are oil jars perfectly clean and dry. The leaves are placed in small layers in these vessels, which must be hermetically closed. The filled jars ought to be kept in a dry and warm place.—Ch. and R.

Resinæ.—The researches into the nature of resins by M. Bonastre ought to be noticed in this place. From his experiments, he considers them as composed, 1. of a volatile oil, 2. of an acid, 3. of a resin, 4. of a sub-resin, 5. of bitter extractive containing some salts.

The existence and detection of sub-resins are the most remarkable results of his inquiry. They are characterized by being entirely destitute of volatile oil, being free from acid, without, however, becoming alkaline, being soluble only in boiling alcohol, ether and volatile oils, assuming in some species a well-determined crystalline form, not forming soaps with the caustic alkalies; and lastly, by possessing in some instances a phophorescent property.—Ch. and R.

Pulvis ipecacuanhæ compositus.—The formula for Dover's powder in the Dispensatory is not similar to that given by Swediaur * in his Pharmacopœia, which is prepared by *fusion* of the salts, and not by their *mixture*. The authors of the French Pharmacopœia have preferred the former, and have inserted it under the title of Pulvis de Ipecacuanha et Opio comp.—Ch. and R.

I subjoin Dover's original receipt:†—"Take opium, 1 ounce; salpetre, tartar vitriolated, of each 4 ounces; ipecacuan, 1 ounce; liquorice, 1 ounce. Put the saltpetre and tartar into a red-hot mortar, stirring them with a spoon till they have done flaming. Then powder them very fine. After that slice in your opium; grind these to a powder, and then mix the other powders with these. Dose from 40 to 60 or 70 grains in a glass of white wine posset going to bed, covering up warm, and drinking a quart or three pints of the posset drink while sweating."

This formula has been adopted into the French Codex, except that the effect of the fire upon the salts is more accurately described as evinced by melting rather than flaming. In fact both salts are incombustible. They are also anhydrous, and the only effect of melting them together is to mix them very intimately, so that the distinction between the two formulæ is of no great consequence. The very large doses prescribed by Dover are worthy of notice, as they contain from 4 to 7 grains of opium. In this composition I have been led to consider the proportion of opium excessive in comparison with that of the ipecacuan, and have repeatedly modified it by combining a full dose of each of the ingredients, or 5 grains of ipecacuan with

* Pharmacopœia Medici Practici Universalis. 12mo. Londini, 1803.

† The Ancient Physician's Legacy to his Country. 8vo. London, 1762. See p. 14.

1 of opium, and in this form diaphoretic effects are more certainly produced than the narcotic.—(A. D.)

Extractum cinchonæ.—The desire expressed by the author of the Dispensatory, that "the preparation of an extract of cinchona, which may contain its active principles in a concentrated form, is a desirable object," probably occurred before his discovery, and that of quinia and the sulphate of quinia, which were the happy consequences of it; notwithstanding M. Saint André * maintains that quinia is not an alkali, and asserts that he has constantly found in its sulphate a considerable portion of sulphate of lime.

We think it proper to give in this place the process of M. Henry Junior, for the extraction of sulphate of quinia; and the subsequent extract from the paper of M. Bernardet will give an idea of the modifications † of that process, which have since been introduced.

Take 2 kilogrammes of yellow cinchona bark, *China regia*; (*Cinchona cordifolia*, L.) after reducing it to a sufficiently fine powder, boil it for an hour with 15 kilogrammes of water, in which have been previously mixed 128 grammes of sulphuric acid at 96°. Strain the acid decoction obtained through linen, and treat the residuum successively by new quantities of acidulated boiling water, until all the bitter principle be extracted from the bark; add about 500 grammes of quicklime in powder to the mixed decoctions, to saturate the excess of acid which the liquid contains, and collect the deposit on a linen filter; drain it well, dry it by the heat of a stove and reduce it to powder. Digest it with alcohol at 36°, sp. gr. 847, at a heat of 60°, (167, F.) Repeat these digestions as long as the alcoholic solutions are bitter; filter and draw off by a water-bath three-quarters of the alcohol employed. On dismounting the apparatus, the quinia mixed with cinchonia is found covered by a turbid liquid very alkaline and bitter; separate this from the product and treat it separately.

Boil the brown viscous deposit (of quinia and cinchonia) slowly with water, very weakly acidified with sulphuric acid, by which it is transformed almost entirely into a white silky sulphate of quinia. Separate this from the mother water, and put it to dry in a stove at the temperature of 25° or 30°, (90° to 100° F.) Evaporate the mother waters, and deprive them of colour by means of animal charcoal, in order to obtain the crystals.

To the liquid mentioned above, add enough of sulphuric acid to neutralize it and saturate the bases; evaporate it to two-thirds

* Journal Medical de la Gironde.

† These modifications were partly known to chemists, but they have never been published.

or a half of its volume, and then throw into it animal charcoal in small quantities. After some moments of ebullition filter quickly and crystallize.

This quantity ought to furnish, according to M. Henry, 64 grammes of pure sulphate.* MM. Pelletier and Caventou† have stated that this estimation is a little too high. It should be only 48 grammes (3 gros) for a pound of yellow cinchona bark.

M. Henry Junior has added some important instructions on which the success of the operation depends. 1*st*, To take care that the liquors are perfectly neutral; 2*d*, that they are well deprived of colour by the means of animal charcoal; 3*d*, always to test at the end of the operation if the sulphate have any excess of base or of acid, and to neutralize it either by some drops of acid or by carbonate of lime as the trial indicates.

The residuum of this process still furnishes quinia.

Quinia and cinchonia have been found simultaneously by M. Robiquet in the three kinds of cinchona. M. Baup's observations on the crystallized neutral sulphate of quinia, and on the supersulphate, may also be consulted.‡ M. Callaud discovered that the sulphate of quinia is phosphorescent.§—Ch. and R.

Sulphas quiniæ.—M. Bernardet, apothecary at Tolouse, has published some critical observations on the different processes for the extraction of the sulphate of quinia.

He modifies in the following manner the method most commonly used, which is that of M. Henry Junior.

1*stly*, In order to exhaust the bark he repeats the decoction seven times, and continues it for an hour each time. It is not until the seventh time, he says, that all trace of bitterness ceases to be perceived.

2*dly*, He afterwards treats with newly slaked and sifted lime these decoctions while still boiling hot. They are then allowed to cool completely, in order to collect the deposit.

3*dly*, The deposit or precipitate, which he washes and divides into small masses, is quickly dried by a stove, and reduced to a fine powder. This he treats several times in the water-bath by alcohol at 0.847, the whole of which, and not three-quarters only, he draws off by distillation.

4*thly*, Instead of treating the viscous product with water slightly acidulated with sulphuric acid, he pours on this matter, previously heated, a proportionate quantity of alcohol, and it is this alcoholic solution, which takes place completely and instantly, that he mixes with water *strongly acidulated*, and previously heated in the water-bath. He then filters it.

* Journal de Pharmacie, T. vii. 1821. P. 296.
† Ibid. p. 302. ‡ Ibid. p. 402. § Ibid. p. 579.

5thly, Far from trying to *neutralize* the solution, he keeps it, on the contrary, constantly acid; and tournesol paper ought to be tinged by it of a deep cherry red. Animal charcoal, such as is found in commerce, suffices to discolour it, and at the same time to saturate it by means of the carbonate of lime, which it contains. On filtering it anew the sulphate of quinia which the viscous matter contained is obtained, in the utmost state of purity and whiteness of which it is susceptible.

In operating on 5 kilogrammes of cinchona bark, it is necessary to use for the viscid matter composing the residuum $7\frac{1}{2}$ litres of acidulated water and 250 grammes of alcohol.

According to the ordinary computation these 5 kilogrammes afford 160 grammes of the sulphate of quinia.—Ch. and R.

The annotators are in the right concerning the time when I expressed my desire that an extract of cinchona, containing all its virtues in a concentrated form might be invented, for it was in the first edition of this Dispensatory published in 1803. It was in the same year that I announced the discovery of cinchonine. * Gomes, prosecuting with success the inquiry which I had begun, first procured pure cinchonia in a crystalline form; † and finally, Pelletier and Caventou, by the discovery of quinia and the salts formed by acids with both bases, completed our knowledge of the essential principles of cinchona bark. ‡

Although my claim as the first discoverer of the essential principle of cinchona bark is now fully admitted by the French chemists, § yet, as it was long erroneously ascribed to Gomes, in consequence of a very imperfect extract of his valuable and candid essay, || I may be excused for reprinting my original paper, in order to establish the exact share I had in a discovery, the practical utility of which is perhaps without example.

Letter from ANDREW DUNCAN, M. D. F. R. S. E. Containing Experiments and Observations on Cinchona, tending particularly to shew that it does not contain Gelatine, to Mr NICHOLSON.

HAVING been long engaged in a series of experiments on the astringent substances employed in medicine, I was particularly interested with the "Abstract of a Memoir on the Febrifuge Principle of Cinchona," contained in the last Number of your excellent Journal. The presence of gelatine in cinchona was so incompatible with experiments I had formerly made, that I was strongly inclined to believe, that Seguin (than whom no one should be better acquainted with the combinations of tannin and gelatine) had been misled, either from having examined cinchona which had been adulterated, or from some other accidental cause. To satisfy myself, I immediately proceeded to the unerring test of experiment, which has convinced me that cinchona does *not* contain

* Nicholson's Journal, Vol. vi. 1803. P. 225.

† Ensaio sobre o Cinchonino, e sobre sua influencia na virtude da Quina e d'outras cascas. *See* Memorias da Academia Real das Sciencias de Lisboa, Tom. iii. p. 201. 4to. Lisboa. Edinburgh Medical and Surgical Journal, Vol. vii. 1811. P. 420.

‡ Journal de Pharmacie, T. vii. 1821. P. 49.

§ Thenard, Traité de Chimie, 5me edit. 1827, T. iii. p. 725; Pelletier, Journal de Pharmacie, T. ix. 1823. P. 479.

|| Annales de Chimie. T. ?

gelatine, but some other principle not yet sufficiently examined, which agrees with gelatine, in forming with tannin a precipitate comparatively insoluble in water. At the same time, it is but fair to remark, that my experiments were made with the infusion and tincture of cinchona, containing all the soluble principles of that substance, whereas Seguin's observations are said to be derived from the examination of the isolated febrifuge principle, of which he gives the following characters: "It precipitates the solution of tan, but not the solutions of gelatine and sulphate of iron." On the contrary, my experiments teach me, that the entire infusion and tincture of cinchona precipitate the solution of tan, and also the solution of gelatine slightly, and the solution of sulphate of iron copiously. But as the two last precipitates may be reasonably ascribed to the action of other principles contained in my infusion and tincture of cinchona, I shall not insist upon them, but proceed to shew that, although cinchona actually does precipitate the solution of tan, yet it does not contain gelatine.

Exp. I.—(*a.*) An ounce of infusion of galls was saturated, by adding to it, in different portions, an ounce and a half of infusion of cinchona. The mixture was white and turbid, with a loose light precipitate.

(*b.*) On filtration the fluid passed almost colourless, and perfectly transparent.

(*c.*) The precipitate, when dried, weighed five grains. It had a yellow colour, and an opaque earthy appearance; was extremely friable, and did not adhere to the filtering paper.

(*d.*) The filtered fluid gave no further precipitate with solution of cinchona; but with half an ounce of solution of gelatine, containing six grains of gelatine in each ounce, it produced a copious precipitate, and was saturated.

(*e.*) The precipitate, when separated by filtration, and dried also, weighed five grains, but was hard and brittle, adhered strongly to the paper, had a yellow colour, and exactly resembled a resin in appearance.

Exp. II.—(*a.*) An ounce of the same infusion of galls was saturated by an ounce and a half of the same solution of gelatine. Immediately a very copious, whitish, tenacious, and adhesive precipitate was formed.

(*b.*) On filtration the fluid passed very slowly, and even after repeated filtration, still retained a slight degree of opaline bluishness.

(*c.*) The precipitate, when dried, weighed fourteen grains and a half. It had a brownish yellow colour, was transparent, and had a resinous appearance and fracture. It was also hard and brittle, and adhered strongly to the filter. In every particular it resembled the precipitate produced in the former experiment (*Exp. I. e.*) by gelatine, after the infusion of galls was completely saturated by cinchona.

(*d.*) In the filtered liquor (*Exp. II. b.*) infusion of cinchona produced no change.

Exp. III.—To an ounce and a half of the same infusion of cinchona, half an ounce of the solution of gelatine was added. It produced only a slight degree of turbidness, and changed the colour of the infusion from a pale greenish to a reddish yellow colour. When filtered, it passed perfectly transparent, and the bottom of the filter was covered with a red varnish; but it had gained only one grain in weight. In other experiments with larger quantities, and stronger infusion of cinchona, the presence of tannin was more strongly indicated.

Exp. IV.—Infusion of galls was not affected by rectified spirits of wine, in which isinglass had been long infused.

Exp. V.—(*a.*) A tincture of cinchona was prepared by infusing it in the same rectified spirits. After it was filtered, some resin was separated by precipitation with water and filtration.

(*b.*) With infusion of galls this tincture gave a copious precipitate, exactly resembling that produced by the same re-agent and infusion of cinchona. (*Exp. I. c.*)

Exp. VI.—With tincture of galls the same tincture of cinchona gave no precipitate.

Exp. VII.—In the mixed tincture (*Exp. VI.*) a copious precipitate was produced by diluting it with water.

Exp. VIII.—A solution of carbonate of potash (salt of tartar) produced a copious white flaky precipitate in the solution of gelatine, which was soluble in boiling water, but was not precipitated from the solution by infusion of galls, until some acid was added.

Exp. IX.—The solution of carbonate of potash changed the colour of the infusion of cinchona to a fine red, without disturbing its transparency.

These facts seem to me sufficient to prove the difference between gelatine and the new principle in cinchona, which, for the sake of convenience, I shall venture for the present to denominate Cinchonin.

Gelatine is soluble in water, and the solution is disposed to gelatinize. Six grains of isinglass dissolved in one ounce of water, form with it, at temperatures below 60° Fahrenheit, a jelly of considerable firmness. From its solution in water, gelatine is precipitated by alcohol, and a solution of carbonate of potash. It is precipitated also by tannin, and the precipitate forms a hard brown transparent mass.

Cinchonin is soluble in water, but gives it no tendency to gelatinize. From its solution in water, it is not precipitated by a solution of carbonate of potash. It is soluble in alcohol. It combines with tannin. The compound is soluble in alcohol, but forms, when water is added, or used as a menstruum, a friable opaque yellowish precipitate; but cinchonin does not separate even from a watery solution of tannin, all that is precipitable by a solution of gelatine.

Edinburgh, 30*th Oct.* 1803.

Gummi-resinæ.—It is to M. Pelletier that we are indebted for the most interesting observations on the gum-resins used in pharmacy, such as assafœtida, euphorbium, galbanum, myrrh.*—Ch. and R.

Electuaria.—Electuaries, conserves, and confections, have never been well distinguished according to these denominations. A confection is an electuary, as well as an electuary is a confection, and both may also be called conserves. (Cadet.)

To obtain more distinctive terms, we may consider sugar as forming their base; and *saccharolés* has been proposed as a general term. Among these preparations, there are some in which sugar, as a true excipient, predominates. These are, properly speaking, the *saccharolés*, which are again divided, according to their degree of consistency. This is the first genus.

The second genus comprehends those in which the sugar is only in the state of an intermedium. These are called *saccharidés*, and are also subdivided.

The *oleo-saccharolés*, (oleo-sacchara, elæo-sacchara of the ancients,) are combinations of volatile oil and sugar. This order is not subdivided. They serve only to augment the power of medicines, or to communicate to them an agreeable smell; but of themselves they are rarely medicinal.

The order of *saccharolés* is so numerous and so varied, that perhaps the requisite perfection for their classification has not yet been attained; it is the order of medicinal forms which presents the greatest difficulties. M. Chereau has proposed, in imitation of Carbonell, to establish a fourth genus under the name of *saccharolés ductiles*. This should have included the pastes or masses, or ductile and plastic medicines of slight consistency. But since the new nomenclature has been published, it is to be expected that this subject will excite some attention, and receive further elucidation. Indeed, already some observations in regard to it have been made by M. Barbier, superintendent professor of

* Bulletin de Pharmacie, T. iii. p. 481, 556, T. iv. p. 49, 98, 241, 502, also in Annales de Chimie, T. lxxix. p. 90, and lxxx. p. 38.

the secondary school of medicine at Amiens, while he acknowledges the usefulness of the reform of terms in pharmacy, and the want of a more correct classification. M. Cap, appointed to report on the nomenclature to the society of medicine and pharmacy of Lyons, is also very capable of diffusing a new light on this matter.—Ch. and R.

ELECTUARIUM SENNÆ.—It would be preferable to diffuse the pulps in the syrup boiled down to a sufficient consistency, than to boil them in it. For this reason the formula for the confection of senna of the London College appears preferable to that of Dublin.—Ch. and R.

TROCHISCI.—The word troche means also both lozenge and pastille. The term has thus three acceptations; which should be avoided; for it would not be proper to take inwardly certain troches, such as those made with the bichloride of mercury or the red protoxide of lead. The term which alludes to their form, the Latin word *pastillus*, means a diminutive of loaf, because in their form they resemble very small loaves, such as children are accustomed to make in their play, or rather because they are made of a fine farinaceous paste.

The forms of troches, their use, every thing are diversified. They are oblong or square, triangular or conical, sometimes flattened, and as if folded up, often in grains like those of oats or barley. Their size is equally diversified. Sometimes they are reserved for external use in surgery; sometimes they are destined to form a part of other medicines, as the troches of vipers' flesh and of squill, which enter into the composition of theriac; in other circumstances they are to be burnt for fumigation. Some of them are antihysterical, others purgative, cordial, or escharotic. Never was there a more abused term; and therefore the authors of the French Pharmacopœia have reduced the number of troches to two only, whereas more than an hundred may be counted in ancient authors. The troches inserted in the Dispensatory are only pastilles or lozenges, of which sugar is the base.—Ch. and R.

PILULÆ.—Pills being considered as medicines, in which sugar is only an intermedium, have been ranged according to the classification which accompanies the new nomenclature among the *saccharidés*, M. Barbier would have preferred placing the electuaries and pills in the series of chronizoic medicines without excipient, along with the powders or *pulverolés*.

"The small quantity of sugar," says this learned professor, "which serves to bind together the ingredients of electuaries and pills, is not sufficient to warrant their introduction among the *saccha-*

ridés. I may add, that syrup is not always made use of to give to electuaries and pills their pharmaceutical form. I would reserve the title *saccharidés* for compounds, such as conserves and jellies, of which sugar forms an essential part. Electuaries and pills have really no excipient. They are powders rendered coherent by the aid of some soft matter."

The machine used for rolling and forming pills is a *pilulier*, (pill-machine;) some are made of copper, but those of silver are preferable.

The powder of lycopodium gives to pills a smooth appearance, and defends them well from moisture. Liquorice, more apt to absorb, gives at first an agreeable taste. It would be improper to abandon the custom of covering pills with gold or silver leaf. No method is better adapted for preserving pills, for preventing them from uniting in a mass, and for pleasing the eye of the patient; and besides, there is no inconvenience from it, unless the pills contain mercury or sulphur or their compounds.—Ch. and R.

CATAPLASMATA.—Cataplasms are only thickened mucilages. The mucilaginous body here performs the principal part. The name of *mucostite* might be given to them, (New Nomenclature.) Sinapisms may be rendered more active by garlic, squill, vinegar, acetic acid, and sea salt, &c.—Ch. and R.

LINIMENTA, UNGUENTA, CERATA, EMPLASTRA.—For the liniments see page 154, (where liniment is twice mispelt linament.—A. D.) The Dispensatory again furnishes an example of the confusion which has reigned among all these preparations. A little more or less of firmness is all that distinguishes ointments from cerates, and cerates from plasters. Would it not seem that this degree of firmness was unchangeable, and proof against the influence of the air, temperature, and time?

If we reflect upon the nature of the medicinal compounds, which pharmacy furnishes for external use in medicine, it will be evident that the only method of classifying them which presents a certain foundation, is according to their excipients. But what are these excipients? Oil and fat, consequently from this results two great natural divisions, 1*st*, the oily compounds; 2*d*, the fatty compounds.

Oily Compounds.—It is to be remarked that oil is often the only greasy body in these, as in medicinal oils, or oily balsams, and the resulting medicine is in a fluid state. Sometimes, on the contrary, they hold wax in solution, which gives to the compound a semiliquid consistency, as in the example of cerate. Lastly, besides wax they may contain resins in solution, as in certain balsams and ointments of which the consistency is soft. Thus the oily compounds present three genera: 1*st*, oils, or *oléolés;* 2*d*, oils and

wax, *oleo-cérolés ; 3d*, oils with wax and resin, *oleo-cérolés resineux.*

Fatty Compounds.—These, so long as they contain nothing but resins and wax, impregnated only with vegetable aroma or colouring principles, or when they are united with metallic substances, only by incorporation or division, do not suffer any very notable change in their composition; but this is not the case when the excipient is united with metallic oxides by combination; there then result very peculiar compounds; and this combination is so intimate, and so changes their nature, that they were for a long time compared to metallic soaps, and that since the publication of M. Chevreul, they have been classed among the salts with metallic oxides for their base.

Oils being formed of oleine and margarine, which are converted into acids either by the action of bases, or of acids, or by the effects of heat, it results that plasters are no longer considered as combinations of oil and metallic oxides, but as true salts, which are sometimes oleo-margarates, and sometimes stearates with metallic protoxides or deutoxides. M. Chereau has proposed in his Pharmaceutical Nomenclature the generic term *Stearotes* for plasters formed by combination.

Thus these compounds are divided naturally into two genera: 1*st*, Fatty compounds, *stéarolés ; 2d*, Fatty compounds combined with oxides, *stearates, (oleo-margarates*, Chevreul.) The *stearolés* include a great number of the compounds of which fat is the excipient, but the denomination of *Stéarolés solides* is given to plasters by mixture.—Ch. and R.

Adeps suillus præparatus.—It is the subcutaneous fat which is used, and that is chosen which covers the ribs, as being of a firmer and denser consistency. Care must be taken to separate from it the pellicles, fibres, and foreign matters, which in the boiling might communicate to it a bad smell.

The apothecary (in France) commonly prepares his own lard, nor does he find it troublesome. He has also the advantage of being able to reckon on its purity; and he has no fear of its being burnt or altered, faults which arise only from improper preparation. He obtains in the first instance a white lard free from water, without bad smell, on whose surface there is often observed, when it has cooled, a kind of symmetric figure, representing rays spreading from a centre, and diverging to their circumference. A more coloured lard, which is obtained by a repetition of the process, is employed in the laboratory for ointments.

Perfumers, after having cut the fat into pieces, beat it in a mortar, and, having washed it in several waters until it is very clean, melt it, and add 64 grammes of alum and a handful of salt to 25

or 30 kilogrammes of fat. In this state it is heated till it boil a little, and is filtered through a sieve of iron wire. This mass is again melted in a water-bath, and mixed with three litres of rose water. The mixture is allowed to settle, and drawn off clear.

This is what is called a pomatum body, *(corps de pommade,)* which keeps well, and is made more or less firm according to the season.—Ch. and R.

Ceratum simplex.—The cerate of our shops, (in France,) differs in containing water which, by its interposition among the particles of the wax and oil, whitens the cerate, and renders it lighter and more cooling. We also make use of oil of sweet almonds instead of olive oil. The water used is the hydroolate of rose, (rose-water,) which perfumes it. Cerate made in this way is perfect.

The name of Galen's cerate is still given to this preparation; but that of the celebrated physician of Pergamus was not quite the same. His was composed of wax, rose oil, and verjuice; he directed it to be washed with cold water, and a little vinegar to be added at the end of the washing. In general, cerates were formerly confounded with ointments, so very little did their consistency differ.

It is necessary sometimes to have a cerate to which no water has been added; we may in this case take of wax, first quality, 160 grammes; oil of sweet almonds, 192 grammes; and then aromatize it. It is used with success for dressing blistered surfaces of large extent, scalds, &c. This is what is called a solid cerate.

Parmentier has recommended for cerates the use of yellow wax, as being more natural. Wax certainly loses its smell by bleaching, and its balsamic qualities must be altered.—Ch. and R.

There is great confusion among the simple liniments, ointments, and cerates, in regard to their composition and consistency. Some are made of white wax, others of yellow; each of these is again combined in various proportions with oil, or lard, and some have spermaceti added to them. The following table gives a synoptical view of those officinal in these kingdoms:—

	Olive oil.	Lard.	White wax.	Yellow wax.	Spermaceti.
Linim. simp. *Ed.*	4	—	1	—	—
Unguent. simp. *Ed.*	5	—	2	—	—
Ungt. ceræ albæ, *Dub.*	—	4	1	—	—
Ungt. ceræ flavæ, *Dub.*	—	4	—	1	—
Ceratum simplex, *Lond.*	1	—	—	1	—
Ceratum simplex, *Ed.*	6	—	3	—	1
Ceratum cetacei, *Lond.*	8	—	4	—	1
Unguent. cetacei, *Lond.*	12	—	1	—	3
Ung. spermatis ceti, *Dub.*	6	—	1	—	2

In the French Codex the *Ceratum simplex* is made with one of white wax to three of almond oil. If the proportions of wax be increased, as 9 to 16, and the cerate be coloured with alkanet, and flavoured with some fragrant oil, it forms lip-salve or *Pomatum ad labia demulcenda.* Their *Oleo-ceratum aquâ subactum* or *Ceratum album,* vulgarly *Ceratum Galeni,* is made of one part of wax, four of almond oil, and three of rose-water beat together, and is the cold cream of our perfumers.—(A. D.)

EMPLASTRUM SIMPLEX.—This plaster is only a solid ointment or a hard ointment, as it is called by M. Deyeux, the chemist who has most insisted upon the difference between metallic plasters and mixtures of pulverized bodies with resin and wax. Although for surgical practice plasters may be classed, according to their consistency and agglutinative properties, the pharmacologist ought to consider them according to their nature and composition, especially since chemistry has disclosed the phenomena which take place in making plasters, by combination with the various oxides. Pharmacy should never make a retrograde step. It ought to advance in the career which is opened to it, taking advantage of all additional information.—Ch. and R.

EMPLASTRUM CANTHARIDIS.—The same observation applies to the title, as in the preceding note. The three formulas given in the Dispensatory furnish what is called English blistering plaster. In the formula of the London College, there is half a part more of wax. It is, however, that which approaches most nearly to the proportions of the new French Codex.

The interposition of gauze between the blistering ointment and the skin, deserves to be pointed out to the attention of physicians, as well as the substitution of savine for cantharides in the issue ointments.

The acrid principle of the savine, on which its efficacy depends, suffers much from long boiling, especially at a high temperature; and this principle is even in part destroyed during the drying of the leaves. They are therefore preferable in a fresh state. The cerate of savine, when it is well made, has a fine deep green colour, and the smell of the fresh leaves when bruised. It must be kept close covered, and guarded from the access of the air.—Ch. and R.

EMPLASTRUM LITHARGYRI.—The plasters known under the name of Diachylum were more complicated, as may be seen from those of Mesué, of Mynsicht, and from the *grand emplatre de diachylon.* The very name, taken from the Greek (for it is long since we have derived assistance from that language), indicates that mucilages ought to enter into their composition.

The gummy Diachylon plaster is the only one which is re-

tained in use. For a long time, in order to prepare it, the gum resins which formed part of it were dissolved in hydralcohol, (proof spirit,) or rather in vinegar. M. Louis Delondres, member of the Society of Pharmacy of Paris, has proposed to dissolve the gum resins with the Burgundy pitch, turpentine, and four ounces of water. On heating this mixture the gum resins are not long in dissolving, and it is filtered by expression. The plaster thus obtained is much more aromatic. * This process is that described by Niemann. † Quincy in 1749 directed for this composition the resins to be melted in the turpentine ‡; but this method had been lost sight of. It was useful to revive it.—Ch. and R.

EMPLASTRUM SAPONIS.—The soap is not commonly boiled with the plaster. It is previously shaved down, and when the plaster is liquefied the soap is incorporated.—Ch. and R.

UNGUENTUM HYDRARGYRI.—A marble mortar is preferable (for the trituration of mercurial ointment to one of iron.) The ointment prepared in an iron mortar discolours the skin of the patient using it.

The trituration is more easily performed in flat-bottomed mortars. In the Apothecaries Hall in London, mercury is killed in a cast-iron trough, in which cylinders of the same substance are made to move in a circular direction.—Ch. and R.

The extinction of mercury in the preparation of mercurial ointment is so troublesome and tedious a process, that the suggestions for facilitating it are almost without number. Even in the present year, there are several papers on the subject in the French Pharmaceutical Journals. M. Guibourt § made some experiments to compare its extinction by means of egg-oil, oil of sweet almonds, and mercurial ointment, with that by fresh lard. He found that egg-oil possessed no superiority over lard, that sweet almond oil facilitated its extinction somewhat, and mercurial ointment very much. He recommends the mercury to be triturated, first with one-sixteenth of old mercurial ointment, and then with the necessary proportion of lard. Although M. Guibourt ascribes the efficacy of old mercurial ointment in aiding the extinction of the mercury to its being oxygenated, he found by dissolving the lard in ether that even in a rancid mercurial ointment, the mercury was not oxidized, but in its metallic state, only minutely divided. The rancidity which mercurial ointment acquires almost as soon as it is made, has led pharmaceutists to attempt its preparation with butter of cocoa, but, as M. Baumé observes, it is impossible to prepare it with fresh cocoa butter, and with M. Guibourt, the process of M. Planche,

* Journal de Pharmacie for 1820.
† Pharmacopœia Batava, edit. J. Frid. Niemann. Lipsiæ, 1824.
‡ Pharm. Quincy by Clausier, Art. 1913.
§ Journal de Chimie Medicale, T. iv. p. 5.

who triturates an ounce of mercury with twenty drops of very fresh egg-oil, and then adds an ounce of cocoa butter melted in a hot earthen mortar, rubbing for half an hour without interruption, did not succeed.

M. Simonin * has also made some observations on the subject, of which the most important is that fresh axunge, which either could not extinguish mercury, or only after very long trituration, did it in the course of a few minutes, after having been spread over an earthenware plate, so as to expose a large surface, and placed for fifteen days in a cellar not too moist, whose temperature was 50° Fahr. Without having become rancid, it had undergone a modification not as yet appreciated.

M. Chevallier, † one of the authors of an excellent system of pharmacy, ‡ defends a process of his own against the statement of M. Simonin that it did not succeed with him. M. Chevallier asserts that it has been employed with uniform success in his laboratory for five years; that it has been employed by all his pupils with an equally satisfactory result; and that it was repeated under the inspection of one of the members of the Pharmaceutical Society appointed for the purpose. Eight ounces of mercury were put into a bottle, and four ounces of melted lard poured upon it. They were then shaken together until the lard began to cool, and had acquired the consistence of a very thick syrup. It was poured out into an earthenware mortar, and stirred continually with a bistortier for ten minutes; four ounces more of lard were added, and the trituration continued. In half an hour the ointment was perfectly prepared.—(A. D.)

UNGUENTUM NITRATIS HYDRARGYRI.—The constitution of this citrine ointment is not yet well understood. It is regarded, when recent, as a compound of oxygenated fat, with interposed supernitrate of mercury. The nitric acid of the nitrate of mercury yields a part of its oxygen to the fat which passes to the state of oxygenated fat, and another part of the oxygen of the acid is combined with the carbon and hydrogen of the fat, and is converted into water and carbonic acid.

It is certain that the ointment is very different, if the nitro-mercurial solution has been mixed hot as the Dispensatory directs, or if it has been mixed cold. In the first case, the preparation has a fine deep yellow colour, which it preserves for a long time both on the surface and in the centre without sensible alteration. It is supposed that the nitrate of mercury is then decomposed. In the second case, the ointment changes colour, tarnishes, and becomes more brittle.—Ch. and R.

The preparation of this ointment has long engaged the attention of

* Journal de Pharmacie, T. xiv. p. 235.
† Ibid. T. xiv. p. 360.
‡ Manuel de Pharmacie.

pharmaceutists both in this country and on the Continent, as they have never been able to give it the fine golden colour and permanent softness desired, and which is possessed by an empirical remedy sold under the name of the Golden Eye-Ointment. The great inconvenience of its becoming hard and acquiring a slate-gray colour, has been generally ascribed to excess of acid hyperoxidizing the fatty substances, and the object has been to reduce the quantity of acid, and to prepare it at the lowest possible temperature. But this appears to be a mistake; for the most perfect ointment of this kind which I have ever seen, and in no respect inferior to the secret preparation, was made by my friend and namesake, one of our most skilful apothecaries, who with great liberality has allowed me to publish his process. Take of nitrous acid 12 ounces, mercury 4 ounces, olive oil ~~8~~ $26\frac{1}{2}$ ounces, axunge 15 ounces; dissolve the mercury in the acid, and pour the solution while still hot into the lard melted in the oil, and still hot, and mix in a vessel capable of containing five times the quantity, as a violent effervescence takes place. If it should not froth up, the action must be assisted by heat. Mr Duncan could not succeed in making the weaker ointment; and he found that the stronger ointment could not be diluted without injuring its properties. The difference between this and the officinal formulæ, are the much larger proportion of acid employed, and the higher temperature applied at the time of the mixture of the mercurial solution with the oily substances. The violent effervescence probably arises from a disengagement of nitric oxide, and it would appear that the rapid oxygenizement did not harden the oily substances so much as a slower change, and that a higher oxygenizement of the nitrate of mercury prevented its decomposition and gradual conversion into the state of protoxide, on which the slate colour of the officinal ointment, when long kept, probably depends.—(A. D.)

No. II.

LIST of OFFICINAL PLANTS in the BRITISH PHARMACOPŒIAS, arranged according to the Natural Orders.

In this list I have followed the system adopted by M. De Candolle in his Essay on the Medical Properties of Plants, as that best adapted for the purpose.

Of the various principles upon which the numerous articles of the vegetable Materia Medica may be considered in a course of Lectures, the classification, according to a Natural Botanical Arrangement, seems to me to possess many advantages. It not only is the most suitable for combining in one discourse the natural, medicinal, and pharmaceutical history of each vegetable, but, by the great similarity which exists in these respects among the individuals forming each family, much repetition is avoided, while a great deal of information can be easily given concerning articles, which, though not officinal in this kingdom, are possessed of virtues that render them valuable in other countries, and may lead to their introduction into more general use. Accordingly, Professor Murray, of Göttingen, in his celebrated *Apparatus Medicaminum*, * followed the natural arrangement of Linnæus; and modifications of that of Jussieu have been adopted by De Candolle † and Richard. ‡

On the present occasion I have confined myself to the plants officinal in the British Pharmacopœias as those of most importance to British practitioners, reserving to a future opportunity the publication of a general list, for which my collections, although considerable, are not complete.

The abbreviations in Roman Capitals after the name of the plant, (L. E. D.), refer to the London, Edinburgh, and Dublin Pharmacopœias. The Italic Capitals which follow, *W*, *R*, *B*, *H*,

* Apparatus Medicaminum tam simplicium quam præparatorum et compositorum in praxeos adjumentum consideratus. Auctore Jo. Andrea Murray. 8vo. Gottingæ. Vol. i. 1776, pp. 627. Vol. ii. 1779, pp. 465. Vol. iii. 1784, pp. 572. Vol. iv. 1787, pp. 665. Vol. v. 1790, pp. 604. Vol. vi. post mortem auctoris edidit L. C. Althof, 1792, pp. 243, cum indice generali. Professor Althof also published a new edition of the two first volumes, Vol. i. 1793, pp. 964, Vol. ii. 1794, pp. 628.

† Essai sur les Proprietés Médicales des Plantes, comparées avec leurs formes exterieures et leur classification naturelle. Par M. Aug. Pyr. De Candolle, 2de edition, revue et augmentée, pp. 397. 8vo. Paris, 1816.

‡ Botanique Médicale, ou Histoire Naturelle et Médicale des Médicamens, des Poisons, et des Alimens, tirés du Règne Végétal. Par Achille Richard, M. D., pp. 817. 8vo. Paris, 1823.

refer,—*W*, to Woodville's Medical Botany *; *R*, to the Phytographie Medicale of M. Roques †; *B*, to Bigelow's American Medical Botany ‡; and *H*, to Hayne's large work ||, in one or other of which the plants are figured. The two last works on Medical Botany I have referred to only when there were no figures in any of the others. § In a few instances where the figures have not yet been copied into any systematic work, I have quoted the original authorities.

* Medical Botany, containing Systematic and General Descriptions, with plates of all the medicinal plants, indigenous and exotic, comprehended in the catalogues of the Materia Medica, as published by the Royal College of Physicians of London and Edinburgh, accompanied with a circumstantial detail of their medicinal effects, and of the diseases in which they have been most successfully employed. By William Woodville, M. D. of the Royal College of Physicians London, in three volumes 4to. London, 1790. Pp. 578.

A Supplement to the Medical Botany, or Part the Second, containing plates, with descriptions of most of the principal medicinal plants not included in the Materia Medica of the Collegiate Pharmacopœias of London and Edinburgh. 4to. London, 1794. Pp. 169. Plates in both works, 274.

† Phytographie Médicale, ornées de figures coloriées de grandeur naturelle, ou l'on expose l'histoire des poisons tirés du Règne Végétal, et les moyens de remédier à leurs effets délétères, avec des observations sur les propriétés et les usages des plantes heroïques. Par Joseph Roques, Docteur en Médicine. Tomes ii. royal quarto. à Paris, 1821. Pp. 304 and 328. Plates, 180.

‡ American Medical Botany; being a collection of the native medicinal plants of the United States, containing their botanical history and chemical analysis, and properties and uses in medicine, diet and the arts, with coloured engravings. By Jacob Bigelow, M. D. 3 vols. royal 8vo. Boston, 1817–18–20. Pp. 197, 199, and 193. Plates in all 60.

|| Getreue Darstellung und Beschreibung der in der Arzneykunde gebräuchlichen Gewächse, wie auch solcher welche mit ihnen verwechselt werden können. Von Fredrich Gottlob Hayne. Berlin. Royal 4to. Erster Band, 1805; ii. 1809; iii. 1813; iv. 1816; v. 1817; vi. 1819; vii. 1821; viii. 1822; ix. 1825; x. 1827; having 48 plates and 96 pages of letter-press in each.

Plantes usuelles des Brasiliens; par M. Auguste de Saint-Hilaire. 4to. Paris, 1824–1828. I have seen 13 numbers, containing in all the descriptions and figures of 64 plants.

§ Medical Botany; or Illustrations and Descriptions of the Medicinal Plants of the London, Edinburgh, and Dublin Pharmacopœias, with those lately introduced into Medical Practice; comprising their generic and specific characters; English, provincial and foreign appellations; a copious list of synonymes; botanical descriptions; natural history; physical, chemical, and medical properties and uses; including also a popular and scientific description of Poisonous Plants, particularly those that are indigenous to Great Britain and Ireland; with figures coloured from nature: the whole forming a complete system of Vegetable Toxicology and Materia Medica. By John Stephenson, M. D. Graduate of the University of Edinburgh; and James Morss Churchill, F. L. S. Member of the Royal College of Surgeons, and Fellow of the Medico-Botanical Society of London. Royal 8vo. Lond. 1827, &c. 23 parts published.

Flora Medica; containing Botanical Descriptions, Natural History, Chemical Properties and Analysis, Medical Properties and Uses, &c. &c. &c.; the number of the different species of the Officinal Plants, comprised in the latest editions of the London, Edinburgh, and Dublin Pharmacopœias; a list of the Indigenous Plants possessing Medicinal Properties, not included therein; a separate list of the Poisonous Plants; an explanation of the classes and orders of the Sexual System of Linnæus, illustrated with coloured delineations; a copious list of Botanical Terms and Definitions; a Tabular Index, showing at one view the generic and specific name of each plant, the class and order to which it belongs in the sexual system of Linnæus, the natural order of Linnæus and Jussieu, its medicinal properties, and the volume and page in which the description is given. Edited by a Member of the London College of Physicians, F. L. S. and assisted by several Members of a Botanical Society. 8vo. Lond. 1827. 14 parts.

DICOTYLEDONES.

RANUNCULACEÆ.—*Acrid, narcotic, purgative, emetic.*
Aconitum Napellus, L. E.—A. paniculatum, D.—*W.* 6, *R.* 129.
Delphinium Staphisagria, L. E. D.—*W.* 154, *R.* 128.
Helleborus niger, L. E. D.—*W.* 18, *R.* 124, *H.* i. 78.
——— fœtidus, L.—*W.* 19, *R.* 126, *H.* i. 10.
Ranunculus acris, D.—*W.* 246.
——— Flammula, D.—*M. B.* 82.

MAGNOLIACEÆ.—*Stimulant; aromatic.*
Wintera aromatica, E.—Drymis aromatica, D.—Drymis Winteri, *H.* ix. 6.

MENISPERMEÆ.—*Bitter, narcotic.*
Menispermum Cocculus, E. D.—*R.* 145.—Cocculus suberosus, De Candolle.
Colomba; L. E. D.—Menispermum palmatum, *H.* ix. 48.—Cocculus palmatus, De C.

MALVACEÆ.—*Mucilaginous; demulcent.*
Malva sylvestris, L. E.—*W.* 54, *H.* ii. 28.
Althæa officinalis, L. E. D.—*W.* 53, *H.* ii. 25.

SIMARUBEÆ.—*Bitter, tonic.*
Quassia excelsa, L. E. D.—Simaruba excelsa, *H.* ix. 16.
——— Simaruba, L. E. D.—*W.* 77.—Simaruba amara, *H.* ix. 15.

RUTACEÆ.—*Stimulant.*
a. *Zygophylleæ.*
Guaiacum officinale, L. E. D.—*W.* 16, *R.* 147.
b. *Rutaceæ veræ.*
Ruta graveolens, L. E. D.—*W.* 37, *R.* 146, *H.* vi. 8.
c. *Diosmeæ.*
Diosma crenata, D. *
d. *Cuspariæ.*
Bonplandia trifoliata, E. D.—Cusparia febrifuga, L.—*R.* 143, *H.* i. 18.

CARYOPHYLLEÆ.—*Fragrant.*
Dianthus Caryophyllus, E. D.—*W.* 80.

LINEÆ.—*Mucilaginous, oily, bitter, cathartic.*
Linum usitatissimum, L. E. D.—*W.* 3, *H.* viii. 17.
——— catharticum, E.—*H.* viii. 18.

VIOLACEÆ.—*Fragrant, emetic.*
Viola odorata, E. D.—*W.* 81, *H.* iii. 2.

HESPERIDEÆ.—*Rind aromatic; juice acidulous.*
Citrus aurantium, L. E. D.—*W.* 183.
——— medica, L. E. D.—*W.* 184.

MELIACEÆ.—*Aromatic, astringent.*
Canella alba, L. E. D.—*W.* 117, *H.* ix. 5.
Swietenia Mahagoni, E.—*W.* 235, *H.* i. 19.

* Travels in the interior of Southern Africa; by William J. Burchell, Esq. 2 vols. 4to. London, 1822. See Vol. i. p. 476.

SARMENTACEÆ.—*Fruit sweet, sub-acid.*
Vitis vinifera, L. E. D.—*W.* 195, *H.* x. 40
GERANIACEÆ.—OXALIDEÆ.—*Acid.*
Oxalis Acetosella, L.—*W.* 20, *H.* v. 39.
GUTTÆFERÆ.—*Resinous, purgative.*
Stalagmitis cambogioides, L. E. D. *
Dryabalonops Camphora, D. †
CRUCIFERÆ.—*Volatile pungency, stimulant.*
Siliquosæ.
Cardamine pratensis, L. E. D.—*W.* 30, *H.* v. 30.
Sinapis alba, E. D.—*H.* viii. 39.
——— nigra, L. D.—*W.* 151, *R.* 139, *H.* viii. 40.
Sisymbrium Nasturtium, E.—*W.* 48, *H.* v. 32.
Siliculosæ.
Cochlearia Armoracea, L. E. D.—*W.* 150, *H.* v. 29.
——— officinalis, D.—*W.* 29, *H.* v. 28.
PAPAVERACEÆ.—*Anodyne.*
Papaver somniferum, L. E. D.—*W.* 185, *R.* 136, *H.* vi. 40.
——— Rhæas, L. E. D.—*W.* 186, *H.* vi. 38.
FRANGULACEÆ.—*Demulcent, purgative.*
Rhamnus catharticus, L. E. D.—*W.* 114, *R.* 159, *H.* v. 43.
TEREBINTHACEÆ.—*Resinous, stimulant.*
Amyris elemifera, L. D.
——— Gileadensis, E.—*W.* 192.
Boswellia serrata, D.—*H.* x. 46.
Pistacia Terebinthus, L. D.—*W.* 153.
——— Lentiscus, L. E. D.—*W.* 152.
Rhus Toxicodendron, L. E. D.—*R.* 156, *H.* ix. 1.
Toluifera Balsamum, L. E. D.—*W.* 193.
POLYGALEÆ.—*Acrid, bitter, astringent.*
Polygala Senega, L. E. D.—*W.* 93, *B.* 30.
Krameria triandra, L. D.—*H.* viii. 14.
LEGUMINOSÆ.—*Gummy, amylaceous, saccharine, purgative, resinous astringent.*
Acacia Arabica, E. D.—*W.* 67.—See *H.* x. 28—33.
——— vera, L. E. D.
——— Catechu, L. E. D.—*W.* 66, *H.* vii. 48.
Astragalus Tragacantha, E.—*W.* 98.—See *H.* x. 7.
——— verus, L.
——— Creticus, D.—See *H.* x. 8.
Cassia Senna, L. E. D.—*W.* 162, see *H.* ix. 41, 42, 43.
——— fistula, L. E. D.—*W.* 163, *H.* ix. 39.
Copaifera officinalis, L. E. D.—*W.* 137, *R.* 155, see *H.* x. 12—23.
Dolichos pruriens, L. E. D.—*W.* 172.
Geoffræa inermis, E. D.—*W.* 112, *R.* 154.
Glycyrrhiza glabra, L. E. D.—*W.* 167, *H.* v. 42.
Hæmatoxylon Campechianum, L. E. D.—*W.* 17, *H.* x. 44.
Myroxylon Peruiferum, L. E. D.
Pterocarpus Santalinus, L. E. D.—*W.* 154.

* Comment. Gotting. Vol. ix. p. 194. Gott. 1789.
† H. T. Colebrooke, Esq. Asiatic Transactions, Vol. xii. p. 537.

LEGUMINOSÆ.
Pterocarpus Draco, E.—*H.* ix. 9.
———— erinacea, L.—Pterocarpus Africanus, Hooker. *
Spartium Scoparium, L. E. D.—*W.* 89, *R.* 152, *H.* ix. 10.
Tamarindus Indica, L. E. D.—*W.* 166, *H.* x. 41.

ROSACEÆ.—*Saccharine, emulsive, astringent, narcotic.*
Amygdalis communis, L. E. D.—*W.* 83, *H.* iv. 39.
———— *var.* amara, L. D.—*H.* iv. 39.
———— Persica, D.—*H.* iv. 38.
Geum urbanum, D.—*W.* 259, *H.* iv. 33.
Prunus domestica, L. E. D.—*W.* 85.
——— Laurocerasus, D.—*W.* 240.
Pyrus Cydonia, L.—*W.* 79, *H.* iv. 47.
Rosa canina, L. E. D.—*W.* 139.
—— centifolia, L. E. D.—*W.* 140.
—— Gallica, L. E. D.—*W.* 141.
Tormentilla erecta, L. E. D.—*H.* ii. 48.

SALICARIÆ.—*Astringent.*
Lythrum Salicaria, D.—*H.* iii. 29.

MYRTI.—*Aromatic; astringent.*
Melaleuca Leucadendron, E. D.—*W.* 229, *H.* x. 9.
———— Cajuputi, L.—*M. B.* 84.
Myrtus Pimenta, L. E. D.—*W.* 26, *H.* x. 37.
Punica Granatum, L. E. D.—*W.* 58, *H.* x. 35.
Eucalyptus resinifera, E.—*H.* x. 5.
Eugenia caryophyllata, L. E. D.—*W.* 135, *H.* x. 38.

UMBELLIFERÆ.—*Aromatic, fœtid stimuli.*
Anethum Fœniculum, L. E. D.—*W.* 160, *H.* vii. 18.
———— graveolens, L.—*W.* 159, *H.* vii. 17.
Angelica Archangelica, E. D.—*W.* 50, *R.* 108, *H.* vii. 8.
Bubon Galbanum, L. E. D.—*W.* 12.
Carum Carui, L. E. D.—*W.* 45, *H.* vii. 19.
Conium maculatum, L. E. D.—*W.* 22, *R.* 107, *B.* 11, *H.* i. 31.
Coriandrum sativum, L. E. D.—*W.* 181, *H.* vii. 13.
Cuminum Cyminum, L.—*W.* 191, *H.* vii. 11.
Daucus Carota, L. E. D.—*W.* 161, *H.* vii. 2.
Ferula Assafœtida, L. E. D.—*W.* 8, *R.* 109.
† Heracleum gummiferum, L. E. D.
Pastinaca Opoponax, L. D.—*W.* 113.
Pimpinella Anisum, L. E. D.—*W.* 180, *H.* vii. 22.

CAPRIFOLIÆ.—*Laxative.*
Sambucus nigra, L. E. D.—*W.* 76, *H.* iv. 16.

RUBIACEÆ.—*Tonic, emetic.*
Cinchona cordifolia, L. E. D.—*R.* 94, *H.* vii. 40.
———— lancifolia, L. E. D.—*R.* 93, *H.* vii. 48.
———— oblongifolia, L. E. D.—*W.* 201, *R.* 95, *H.* vii. 41.

* Travels in Western Africa; by Major William Gray, and the late Staff-Surgeon Dochard. 8vo. London, 1825. See p. 395.

† D. C. L. Willdenow, Hortus Berolinensis, folio. Berolini, 1816. See Tab. 53, 54.

RUBIACEÆ.
Cephaëlis Ipecacuanha, L. D.—*R.* 97, *St H.* vi. *H.* viii. 20.
Rubia tinctorum, L. E. D.—*W.* 68.

VALERIANEÆ.—*Fœtid stimulant.*
Valeriana officinalis, E. D. L.—*W.* 96, *R.* 91, *H.* iii. 32.

COMPOSITÆ.—*Bitter stimulant, narcotic.*
a *Corymbiferæ.*
Anthemis nobilis, L. E. D.—*W.* 103, *H.* x. 47.
——— Pyrethrum, L. E. D.—*W.* 104.
Arnica montana, E. D.—*W.* 4, *R.* 90, *H.* vi. 47.
Artemisia Absinthium, L. E. D.—*W.* 120, *R.* 89, *H.* ii. 11.
——— Chinensis, D.
——— Indica, D.
——— Santonica, E. D.—*W.* 123.
Inula Helenium, L. D.—*W.* 129, *H.* vi. 45.
Tanacetum vulgare, D.—*W.* 115, *H.* ii. 6.
Tussilago Farfara, L. E. D.—*W.* 13, *H.* ii. 16.
b. *Cynarocephalæ.*
Arctium Lappa, E. D.—*W.* 15, *H.* ii. 35.
Cnicus (Centaurea) benedictus, L. E. D.—*W.* 42.
c. *Cichoraceæ.*
Lactuca virosa, E. D.—*W.* 250, *R.* 88, *H.* i. 47.
——— sativa, L. E. D.—*H.* vii. 30.
Leontodon Taraxacum, L. E. D.—*W.* 3, *H.* ii. 4.

CUCURBITACEÆ.—*Bitter, purgative.*
Cucumis Colocynthis, L. E. D.—*W.* 175, *R.* 174.
Momordica Elaterium, L. E. D.—*W.* 43, *R.* 173, *H.* viii. 45.

ERICINEÆ.—*Astringent, narcotic.*
Arbutus Uva-ursi, L. E. D.—*W.* 70, *B.* 6, *H.* iv. 20.
Rhododendrum Chrysanthum, E.—*W.* 149, *R.* 84, *H.* x. 27.
Pyrola Umbellata, D.—*M. B.* 93.

EBENACEÆ.—*Resinous, balsamic.*
Styrax officinale, L. E. D.—*W.* 71.
——— Benzoin, L. E. D.—*W.* 72.

OLEINEÆ.—*Oleaginous, demulcent.*
Olea Europæa, L. E. D.—*W.* 136, *H.* x. 10.
Fraxinus Ornus (Manna)—L. E. D.—*W.* 36, *M. B.* 53.

STRYCHNEÆ.—*Bitter, narcotic.*
Strychnos Nux-vomica, D.—*W.* 223, *R.* 81, *H.* i. 17.

GENTIANÆ.—*Bitter, tonic.*
Chironia (Erythræa) Centaureum, L. E. D.—*W.* 157.
Gentiana lutea, L. E. D.—*W.* 156, *R.* 72.
Menyanthes trifoliata, L. E. D.—*W.* 2, *R.* 73, *B.* 46, *H.* iii. 14.
Spigelia Marilandica, L. E. D.—*W.* 105, *R.* 76, *B.* 14.

CONVOLVULACEÆ.—*Resinous, purgative.*
Convolvulus Scammonia, L. E. D.—*W.* 5, *R.* 71.
——— Jalapa, L. E. D.—*W.* 21, *R.* 70.

BORAGINEÆ.—*Mucilaginous, colouring.*
Anchusa tinctoria, E.—*W.* 92, *H.* x. 11.

SOLANEÆ.—*Narcotic, acrid.*
Atropa Belladonna, L. E. D.—*W.* 1, *R.* 63, *H.* i. 43.
Capsicum annuum, L. E. D.—*W.* 144, *H.* x. 24.
Datura Stramonium, L. E. D.—*W.* 124, *R.* 62, *B.* 1. *H.* iv. 7.
Hyoscyamus niger, L. E. D.—*W.* 52, *R.* 57, *B.* 17.
Nicotiana Tabacum, L. E. D.—*W.* 60, *R.* 60, *B.* 40.
Solanum Dulcamara, L. E. D.—*W.* 33, *R.* 68, *B.* 18, *H.* ii. 39.
Verbascum Thapsus, D.—*W.* 125.

PERSONATÆ.—*Narcotic, diuretic.*
Digitalis purpurea, L. E. D.—*W.* 24, *R.* 53, *H.* i. 45.
Gratiola officinalis, E.—*W.* 47, *R.* 56, *H.* iii. 13.
Scrophularia nodosa, D.—*R.* 51, *H.* v. 35.

LABIATÆ.—*Fragrant.*
Hyssopus officinalis, E.—*W.* 65, *H.* vi. 18.
Lavandula spica, L. E. D.—*W.* 55, *H.* viii. 37, 38.
Marrubium vulgare, L. E. D.—*W.* 97.
Melissa officinalis, E. D.—*W.* 147, *H.* vi. 32.
Mentha Piperita, L. E. D.—*W.* 169, *R.* 50.
——— Pulegium, E.—*W.* 171.
——— viridis, L. D.—*W.* 176.
Origanum Majorana, E. D.—*W.* 165, *H.* viii. 9.
——— vulgare, L. D.—*W.* 164, *H.* viii. 8.
Rosmarinus officinalis, L. E. D.—*W.* 87, *H.* vii. 25.
Salvia officinalis, E.—*W.* 38, *H.* vi. 1.

POLYGONEÆ.—*Astringent, acid, purgative.*
Polygonum Bistorta, L. E. D.—*W.* 34, *H.* v. 19.
Rheum palmatum, L. E. D.—*W.* 46.
——— undulatum, D.
Rumex aquaticus, D.—*W.* 178.
——— Acetosa, L. E. D.—*W.* 69.

LAURINEÆ.—*Aromatic, narcotic.*
Laurus Cinnamomum, L. E. D.—*W.* 27.
——— Cassia, L. E. D.
——— nobilis, L. E. D.—*W.* 32.
——— Sassafras, L. E. D.—*W.* 31, *B.* 35.
——— Camphora, L. E. D.—*W.* 155, *R.* 44.

MYRISTICEÆ.—*Aromatic.*
Myristica moschata, L. E. D.—*W.* 134, *H.* ix. 12.

THYMALEÆ.—*Acrid.*
Daphne Mezereum, L. E. D.—*W.* 23, *R.* 41, *H.* iii. 43.

ARISTOLOCHIÆ.—*Acrid.*
Aristolochia Serpentaria, L. E. D.—*W.* 106, *R.* 40, *B.* 49, *H.* ix. 21.
Asarum Europæum, L. E. D.—*W.* 86, *R.* 38, *H.* i. 44.

EUPHORBIACEÆ.—*Stimulant, purgative, resinous, oily.*
Croton (Eleutheria) Cascarilla, L. E. D.—*W.* 41.
——— Tiglium, L. D.—*M. B.* 4.
Euphorbia officinarum, L.
——— Canariensis, D.
Ricinus communis, L. E. D.—*W.* 61, *R.* 168, *H.* x. 48.

MONIMIEÆ.—*Stimulant.*
Dorstenia Contrajerva, L. E.—*W.* 51.
URTICEÆ.—*Acrid, bitter, demulcent.*
Ficus Carica, L. E. D.—*W.* 130, *H.* ix. 13.
Humulus Lupulus, L. D.—*B.* 60, *H.* viii. 36.
Morus nigra, L. D.—*W.* 129.
Piper nigrum, L. E. D.—*W.* 187, *R.* 176.
—— longum, L. E. D.—*W.* 188.
—— Cubeba, D.
AMENTACEÆ.—*Astringent, mucilaginous.*
Quercus Robur, E. D.—*W.* 126, *H.* vi. 35.
——— infectoria, D.
——— pedunculata, L.—*H.* vi. 36.
Salix fragilis, D.—*W.* 198.
—— alba, D.
—— Caprea, L. D.
Ulmus campestris, L. E. D.—*W.* 197, *H.* iii. 15.
CONIFERÆ.—*Resinous.*
Pinus Abies (Abies picea,) L. E. D.—*W.* 208, 209, *R.* 177.
—— sylvestris, L. E. D.—*W.* 207.
—— Larix (Larix Europæa,) E. D.—*W.* 210, *R.* 178.
—— Balsamea (Abies balsamea) L. E. D.—*M. B.* 74.
Juniperus communis, L. E. D.—*W.* 95, *B.* 44.
———— Sabina, L. E. D.—*W.* 94, *R.* 179.
———— Lycia, L. E.—*W.* 206.

MONOCOTYLEDONES.

DRYMYRRHIZÆ.—*Aromatic, amylaceous.*
Amomum Zingiber (Z. officinale) L. E. D.—*W.* 11.
———— Cardamomum, D.—*W.* 131.
———— repens, E.—Matonia Cardamomum, L.
Curcuma longa, E.—*W.* 132.
IRIDEÆ.—*Fragrant.*
Crocus sativus, L. E. D.—*W.* 176, *R.* 37, *H.* vi. 25.
Iris Florentina, E.—*W.* 39.
SMILACEÆ.—*Mucilaginous.*
Smilax Sarsaparilla, L. E. D.—*W.* 194.
LILIACEÆ.—*Pungent, bitter, purgative, emetic.*
Allium sativum, L. E. D.—*W.* 168, *R.* 30, *H.* vi. 6.
——— Cepa, D.
——— Porrum, L.
Aloe spicata, L. D
—— vulgaris, D.—*R.* 27.
Scilla maritima, L. E. D.—*W.* 118, *R.* 29.
COLCHICACEÆ.—*Narcotic.*
Colchicum autumnale, L. E. D.—*W.* 177, *R.* 23, *H.* v. 45.
Veratrum album, L. E. D.—*W.* 100, *R.* 21.
PALMÆ.—*Oily, amylaceous.*
Cocos butyracea, E.

JUNCEÆ.—*Fragrant.*
Acorus Calamus, L. E.—*W.* 175, *H.* vi. 31.
GRAMINEÆ.—*Amylaceous, saccharine.*
Avena sativa, L. E. D.
Hordeum distichon, L. E. D.
Saccharum officinarum, L. E. D.—*W.* 196, *H.* ix. 30, 31.
Triticum hybernum, L. E. D.
FILICES.
Aspidium (Polypodium) Filix mas, L. E. D.—*W.* 49.

ACOTYLEDONES.

LICHENES.—*Amylaceous, colouring.*
Lichen Islandicus, L. E.—Cetraria Islandica, D.—*W.* 205.
Rocella tinctoria, D.—*M. B.* 69.
FUNGI.
Boletus igniarius, E.
ALGÆ.
Fucus vesiculosus, L. D.

No. III.

CLASSIFICATION of the MATERIA MEDICA, as objects of Natural History in its early state.

The great number of articles employed in medicine, has rendered necessary their classification upon various principles, according to the state of the science at the time.

One of the earliest was to classify them according to the kingdom of nature to which the substances belonged, with subdivisions derived from some obvious circumstance. In regard to the vegetable kingdom, the numerous articles furnished by it were divided according to the part or organ which was used in medicine. This arrangement was long followed in all the public Pharmacopœias, and is still followed by Guibourt in his recent valuable work on Pharmacology. * As such an arrangement is instructive and useful to the practical apothecary, I have classified in this way the simples belonging to the Materia Medica of the British Colleges.

I. ORGANIC SUBSTANCES.

1. VEGETABLE SUBSTANCES.

a. *Entire vegetables: Cryptogamic.*

Boletus igniarius, E.
Lichen Islandicus, L. E.—Cetraria Isl. D.
Rocella tinctoria, D.
Fucus vesiculosus, L. D.

b. *Bulbs.*

Allium sativum, L. E. D.
——— Cepa, D.
——— Porrum, L.
Colchicum autumnale, L. E. D.
Scilla maritima, L. E. D.

c. *Roots.*

Acorus Calamus, L. E.
Althæa officinalis, L. E. D.
Amomum Zingiber, E. D.—Zingiber officinale, L.
Anchusa tinctoria, E.
Angelica Archangelica, E.
Anthemis Pyrethrum, L. E. D.
Arctium Lappa, E. D.
Aristolochia Serpentaria, L. E. D.
Arnica montana, E. D.
Aspidium Filix mas, L. E. D.
Atropa Belladonna, D.
Cochlearia Armoracia, L. E. D.
Colomba, E. D.—Cocculus palmatus, L.
Convolvulus Jalapa, L. E. D.
Curcuma longa, D.
Daucus Carota, L. E. D.

* Histoire abregée des Drogues simples, par N. J. B. G. Guibourt, Pharmacien, Membre adjoint de l'Academie Royale de Médécine. 2de edition, corrigée et augmentée. 8vo. Paris, 1826. Pp. xvi. 471, and 528.

Dorstenia Contrajerva, L. E.
Gentiana lutea, L. E. D.
Geum urbanum, D.
Glycyrrhiza glabra, L. E. D.
Helleborus niger, L. E. D.
Inula Hellenium, L. D.
Ipecacuanha, L. E. D.—Callicocca, L.—Cephaëlis, D.
Iris Florentina, E.
Krameria triandra, L. D.
Laurus Sassafras, L. E.
Leontodon Taraxacum, L. E. D.
Polygala Senega, L. E. D.
Polygonum Bistorta, L. E. D.
Rheum palmatum, L. D.
——— undulatum, D.
——— Russicum vel Turcicum, E.
——— Sinense vel Indicum, E.
——— Britannicum, E.
Smilax Sarsaparilla, L. E. D.
Spigelia Marilandica, L. E. D.
Tormentilla officinalis, L. D.—T. erecta, E.
Valeriana officinalis, L. E. D.
Veratrum album, L. E. D.

d. *Herbs.*

Centaurea benedicta, E.—Cnicus benedictus, D.
Cochlearia officinalis, D.
Datura Stramonium, L. E. D.
Gratiola officinalis, E.
Hyoscyamus niger, L. E. D.
Hyssopus officinalis E.
Lactuca sativa, L. E. D.
——— virosa, E. D.
Linum catharticum, L.
Lythrum Salicaria, D.
Malva Sylvestris, L. E.
Marrubium vulgare, L. E. D.
Melissa officinalis, E. D.
Mentha Piperita, L. E. D.
——— Pulegium, L. E. D.
——— viridis, L. E. D.
Origanum Majorana, E. D.
——— vulgare, L. D.
Oxalis Acetosella, L.
Pyrola umbellata, D.
Ranunculus Flammula, D.
Sisymbrium Nasturtium, E.

Leaves.

Aconitum Napellus, L. E. Aconitum paniculatum, D.
Althæa officinalis, L. E. D.
Amygdalus Persica, D.
Arbutus Uva ursi, L. E. D.
Arnica montana, D.
Artemisia Absinthium, L. E. D.
Asarum Europæum, L. E. D.
Atropa Belladonna, L. E. D.
Cassia Senna, L. E. D.
Citrus Aurantium, D.
Conium maculatum, L. E. D.
Digitalis purpurea, L. E. D.
Diosma crenata, D.
Helleborus fœtidus, L.
Juniperus Sabina, L. E. D.
Laurus nobilis, L. E. D.
Menyanthes trifoliata, L. E. D.
Momordica Elaterium, D.
Nicotiana Tabacum, L. E. D.
Ranunculus acris, D.
Rhododendron Chrysanthum, E.
Rhus Toxicodendron, L. E. D.
Ruta graveolens, L. E. D.
Salvia officinalis, E. D.
Scrophularia nodosa, D.
Tanacetum vulgare, D.
Tussilago Farfara, L. E. D.
Verbascum Thapsus, D.

Summits.

Juniperus communis, L. D.
Rosmarinus officinalis, L. E. D.
Spartium Scoparium, L. E. D.

Twigs.

Solanum Dulcamara, L. E. D.

Flowers, and Flowering Tops.

Anthemis nobilis, L. E. D.
Arnica montana, E. D.
Artemisia vulgaris, D. E.
Cardamine pratensis, L. E. D.
Chironia Centaureum, L. E.
Erythræa Centaureum, D.
Citrus Aurantium, D.
Crocus sativus, L. E. D.
Dianthus Caryophyllus, E. D.
Eugenia caryophyllata, L. E. D.
Lavandula spica, L. E. D.
Laurus Cassia, E.
Malva sylvestris, E.

Papaver Rhæas, L. D.
Punica Granatum, D.
Rosa centifolia, L. E. D.
—— Gallica, L. E. D.
Sambucus nigra, L. E. D.
Viola odorata, E. D.

Fruits; Capsules.

Capsicum annuum, L. E. D.
Cassia fistula, L. E. D.
Citrus Aurantium; Succus, L. E. D.
———— Cortex, L. E. D.
——— medica; Succus, L. E. D.
———— Cortex, L. E. D.
Cucumis Colocynthis, L. E. D.
Dolichos pruriens, L. E. D.
Ficus Carica, L. E. D.
Humulus Lupulus, L. D.
Juniperus communis, L. E. D.
Laurus nobilis, L. E. D.
Menispermum Cocculus, E.—Cocculus suberosus, D.
Momordica Elaterium, L. D.
Morus nigra, L. D.
Myrtus Pimento, L. E. D.
Papaver somniferum, L. E. D.
Piper longum, L. E. D.
——— nigrum, L. E. D.
——— Cubeba, D.
Prunus domestica, L. E. D.
Punica Granatum, L. E. D.
Rhamnus catharticus, L. E. D.
Rosa canina, L. E. D.
Sambucus nigra, E. D.
Tamarindus Indica, L. E. D.
Vitis vinifera, L. E. D.

Seeds.

Amomum repens, E.—Amomum cardamomum, D.—Matonia cardamomum, L.
Amygdalus communis, *var.* dulcis, L. E. D.
Amygdalus communis, *var.* amarus, L. D.
Anethum fœniculum, L. E. D.
———— graveolens, L.
Angelica Archangelica, D.
Arctium Lappa, D.
Artemisia Santonica, E. D.
Avena sativa, L. E. D.
Carum Carui, L. E. D.
Colchicum autumnale, L. D.
Coriandrum sativum, L. E. D.
Conium maculatum, L.
Cuminum Cyminum, L.
Datura Stramonium, L. D.
Daucus Carota, L. D.
Delphinium Staphisagria, L. E. D.
Digitalis purpurea, L.
Hordeum distichon, L. E. D.
Hyoscyamus niger, L. E.
Linum usitatissimum, L. E. D.
Myristica moschata; Macis, E.D.
————Nux, L.E.D.
Pimpinella Anisum, L. E. D.
Pyrus Cydonia, L.
Ricinus communis, L. E.
Sinapis alba, E. D.
——— nigra, L. D.
Strychnos Nux vomica, D.

Barks.

Angustura; Bonplandia trifoliata, E. D.—Cusparia febrifuga, L.
Canella alba, L. E. D.
Cinchona cordifolia,
———— lancifolia,
———— oblongifolia, } L.E.D.
Croton Eleutheria, E.—Croton Cascarilla, L. D.
Daphne Mezereon, L. E. D.
Geoffroya inermis, E. D.
Laurus Cassia, E. D.
——— Cinnamomum, L. E. D.
——— Sassafras, D.
Punica Granatum; radicis cortex, D.
Quassia Simaruba, L. E. D.
Salix Capræa, L. D.
—— fragilis, D.
—— alba, D.
Sambucus nigra, E. D.
Swietenia Mahagoni, E.
Ulmus campestris, L. E. D.
Wintera aromatica, E.—Drymis aromatica, D.

Woods.

Guaiacum officinale, L. E. D.
Hæmatoxylum Campechianum, L. E. D.

Laurus Sassafras, L. E. D.
Pterocarpus Santalinus, L. E. D.
Quassia excelsa, L. E. D.

Concrete Juices, gummy and extractive.

Gummi Arabicum; Acacia Arabica, E. D.—Acacia vera, L. E. D.
Gummi Tragacantha; Astragalus Tragacantha, E.—Ast. Creticus, D.—Ast. verus, L.
Kino, D.—Eucalyptus resinifera, E.—Pterocarpus erinacea, L.
Lactucarium, Lactuca sativa, E.
Manna; Fraxinus Ornus, L. E. D.
Opium; Papaver somniferum, L. E. D.

Resins and Gum Resins.

Ammoniacum: Heracleum gummiferum, L. E. D.
Assafœtida—Ferula Assafœtida, L. E. D.
Balsamum Gileadense; Amyris Gileadensis, E.
——— Peruvianum. Myroxylon Peruiferum, L. E. D.
——— Tolutanum—Toluifera balsamum, L. E. D.
Benzoinum—Styrax Benzoin, L. E. D.
Camphora—Laurus Camphora, L. E. D.—Dryabalanops Camphora, D.
Copaiba; Copaifera officinalis, L. E. D.
Elemi; Amyris elemifera, L. D.
Euphorbium; Euphorbia officinarum, L. E.—Euphorbia Canariensis, D.
Galbanum; Bubon Galbanum, L. E. D.
Gambogia, Stalagmitis Cambogioides, L. E. D.
Guaiacum; Guaiacum officinale, L. E. D.
Myrrha, L. E. D.
Olibanum, Juniperus Lycia, L. E.—Boswellia serrata, D.
Opoponax—Pastinaca Opoponax, L. D.
Pix Burgundica, E. D.—Pix Abietina, L.—Pinus Abies, L. D.—Pini varii, E.
Pix liquida, L. D.—Resina empyreumatica, E.—Pinus sylvestris, L. D.—Varii Pini, E.
Pix nigra, L. E.—Pinus sylvestris, L.—Pini varii, E.
Resina, D.—Resina alba, E.—Resina flava, L.—Pinus sylvestris, L. D.—Pini varii, E.
Sagapenum, L. E. D.
Scammoneum; Convolvulus Scammonia, L. E. D.
Storax—Styrax officinale, L. E. D.
Terebinthina Canadensis; Pinus balsamea, L. E. D.
——— Chia; Pistachia Terebinthus, L.
——— Veneta; Pinus Larix, E. D.
——— vulgaris; Pinus sylvestris, L. E. D.
Thus, D.—Abietis resina, L.—Pinus abies, L. D.

Extracts.

Aloe hepatica, E. D.—Aloe vulgaris, D.
——— Socotorina, L. E. D.—Aloe spicata, L. E. D.
Catechu—Acacia Catechu, L. E D.
Glycyrrhiza glabra, L. E. D.
Saccharum purificatum, et non purificatum.—Saccharum officinarum, L. E. D.
Syrupus empyreumaticus, E. D.

Oils, volatile and distilled.

Citrus medica, L. E. D.
Eugenia caryophyllata, L. E. D.
Laurus Cinnamomum, L. D.
——— Sassafras, D.
Melaleuca Leucadendron, E. D. M. Cajuputi, L.
Myristica moschata, D.
Origanum vulgare, D.
Oleum Terebinthinæ.—Pinus sylvestris, L. D.—Pini variæ species, E.

Oils, fixed and expressed.

Cocos butyracea, E.

Croton Tiglium, L. D.
Laurus nobilis, E.
Myristica moschata, L. D.
Olea Europea, L. E. D.

Vegetable products and miscellaneous substances.

Amylum.—Triticum hybernum, L. E. D.
Elaterium; Momordica Elaterium, L. E. D.
Farina tritici, L. D.
Farina avenæ, E.
Gallæ, L. E. D.—Quercus infectoria, D.
Vinum album Hispanum, E. D.
Cerevisiæ fermentum, L. E
Alcohol fortius, L. E. D.
——— dilutius, L. E. D.
Carbo ligni, L. E. D.
Bitumen petroleum, L. E. D.
Succinum, L. E. D.

2. Animals and animal substances.

Cantharides, L.E.D.—Cantharis vesicatoria, D.—Lytta vesicatoria, L.—Meloe vesicatorius, E.
Castoreum; Castor Fiber, L.E.D.
Cera flava, L. E. D.
—— alba, L. E. D.
Cetaceum, L.D.—Spermaceti, E.
Coccinella; Coccus cacti, L.E.D.
Cornua, L. E.
Hirudo medicinalis, D.
Mel, L. E. D.
Moschus; Moschus moschiferus, L. E. D.
Ossa, E. D.
Ovum.—Phasianus Gallus, L.
Spongia officinalis, L. E. D.

II. INORGANIC.

a. *Simples and Inflammables.*

Carbo ligni, L. E. D.
Bitumen Petroleum, L. E. D.
Iodinium, D.
Succinum, L. E. D.
Sulphur, L. E. D.

Acids.

Acetum, L. E. D.
Acidum nitricum, L. E. D.
——— sulphuricum, L. E. D.

Alkalis, Earths, and Salts.

Alumen, L. E. D.
Ammoniæ murias, L. E. D.
Barytæ carbonas, E.
——— sulphas, E. D.
Calx, E. D.
Calcis carbonas, L. E. D.
Magnesiæ subcarbonas, L.
——— sulphas, L. E. D.
Potassæ subcarbonas, L. E. D.
——— supertartras impurus, L. D.
——— ——— purus, L. E. D.
——— nitras, L. E. D.
——— sulphas, L.
Sodæ subcarbonas, L. E. D.
—— subboras, L. E. D.
Sodæ murias, L. E. D.

Metals, and Metallic compounds.

Antimonii sulphuretum, L.E.D.
——— vitrum, L.
Argentum, L. E. D.
Arsenici oxydum, L. E. D.
Bismuthum, L. D.
Cupri sabacetas, L. E. D.
——— sulphas, L. E. D.
Ferri fila, L. E. D.
—— limatura, L. E. D.
—— sulphas, L. E. D.
—— oxydum nigrum, E. D.
Hydrargyrum, L. E. D.
Hydrargyri sulphuretum rubrum, L. E. D.
Manganesium, D.
Plumbum, E.
Plumbi oxidum rubrum, E.
——— semivitreum, L. E. D.
——— carbonas, L. E. D.
Stanni limatura, L. E. D.
——— pulvis, E. D.
Zincum, L. E. D.
Zinci oxidum impurum, E.
—— carbonas impurus, L. E. D.

No. IV.

CLASSIFICATION of the General Terms used by Writers on General Therapeutics and Pharmacology.

Although many of these terms are obsolete, some of them vague and ill-defined, and others hypothetical, yet, as they occur in writers of authority, and are sometimes useful, I have collected them together. Dr Cullen * has given a pretty full alphabetical catalogue of many of them, stating, in regard to each term, in what sense it has been commonly or particularly employed, with what propriety it has been used, why he does not employ it, and very often why it should not be employed at all. I have attempted, in imitation of Linnæus, † to arrange them systematically, generally contrasting with each term its antagonist or opposite term, when any has been used, so as to abbreviate explanation, and frequently to render it unnecessary.

Terms derived from the Action of External Agents.

I. On the function of assimilation.

Synthetica—tend to the formation of the body. ⚹ —Analytica—tend to decompose and waste it.
Nutrientia—nourish the body.
Restaurantia, Analeptica—restore lost strength.

II. On the mechanical state of the solids.

Humectantia, ⚹ Absorbentia, Exsiccantia.
Emollientia, Laxantia, Relaxantia, Chalastica, Impinguantia, ⚹ Astringentia, Indurantia, Tonica, Roborantia.

III. On the vital functions of the solids.

Stimuli, Stimulantia, Alexiteria, ⚹ Controstimuli.
Excitantia, ⚹ Sedantia, Deprimentia.
Intoxicantia, Inebriantia, Narcotica, Fatuantia, Temulentia, Phantastica, ⚹ Antitoxica, Antidota, Alexipharmaca, Alexicaca, Theriaca, Bezoartica.
Anthypnotica, ⚹ Hypnotica, Somnifera.
Calefacientia, ⚹ Refrigerantia.

* A Treatise on Materia Medica, in two volumes, 4to. Edinburgh, 1789. See Vol. i. p. 161.

† Materia Medica, Liber i. De Plantis. 8vo. Amsteledæmi, 1749.

IV. ON VESSELS OR CANALS.

Anastomotica—opening the extreme orifices of blood-vessels. ⚹ Styptica, Stenotica, Ischæma—contracting the orifices of vessels or calibre of canals.

Aperientia, Solventia, Deobstruentia, Deoppilantia—removing obstructions.

V. ON FLUIDS.

a. *Altering quantity.*

Implentia, ⚹ Deplentia.

b. *Altering distribution.*

Attrahentia, Epispastica, draw fluids to a part, ⚹ Repellentia, Repercutientia.

Intercipientia, Apocrustica, drive fluids from a part.

Derivativa—Revulsiva, draw fluids from a part.

c. *Altering consistence, Diathetica.*

Diluentia, Inundantia, ⚹ Inspissantia.

Incidentia, Attenuantia, ⚹ Incrassantia.

d. *Altering quality.*

Dyscrasiaca, Immutantia, Alliotica, Alterantia.

In—Ob-volventia, Obtundentia, Inviscantia, blunting acrimony.

Lenientia—Temperantia, Demulcentia, Edulcorantia, Antacria, correct irritants.

Antacida, Absorbentia, ⚹ Antalkalina.

Depurantia, Abstersiva, removing acrimony.

Balsamica, resisting bitter putridity.

VI. ON NATURAL SECRETIONS AND EXCRETIONS.

Evacuantia, Evacuatoria, ⚹ Sistentia.

Errhina, Ptarmica, Sternutatoria.

Anacathartica, Pituitosa, Apophlegmatizonta, Apophlegmatizantia, Apophlegmatica, purge upwards.

Masticatoria, Sialogoga, Salivantia.

Expectorantia, Tussiculosa.

Emetica, Vomitoria, Singultuosa, ⚹ Antiemetica.

Physagoga, Ructatoria, Carminativa, Borborygmica, Flatulentia.

Cathartica, purge downwards.

Eccoprotica, Alviduca, Laxativa, Laxantia, Purgantia leniora.

Purgantia drastica.

Panchymagoga.

Hydragoga.

Phlegmagoga.

Cholagoga.

Melanogoga.

Diuretica.

Menagoga, Emmenagoga.

Abortiva, Amblotica, Ecbolica.

Aristolochica.

Lactifera, Galactophora, ⚹ Lactifuga.

Diapnoica, Diaphoretica, promote insensible perspiration.
Sudorifica, Hydrotica, Perspirantia, produce sweat.

Terms derived from the Body itself.

VII. TERMS DERIVED FROM DISEASES.

Acopa, against lassitude.
Antisthenica, Debilitantia.
Antipyretica, Antiphlogistica, Antifebrilia, Febrifuga.
Antiquartana.
Antiloimica, against plague.
Antihectica.
Anticahectica.
Antiseptica, against putrid diseases, ⋊ Septica.
Antispasmodica.
Antiparalytica.
Antidydinica, against giddiness.
Anodyna, Paregorica, Sopientia, against pain.
Antasthmatica.
Antiphthisica.
Hysterica, Antihysterica, Anthypochondriaca.
Anticolica.
Antidysenterica.
Arthritica, Antarthritica, Antipodagrica.
Antiscorbutica.
Antilyssus, against the bite of a mad dog.
Antivenerea.
Antiambusta, Anticaustica, against burns.
Antiscolica, Anthelmintica, against worms.
Phtheiroctonia, Phthiriaca, against lice.
Lithontriptica.

VIII. TERMS DERIVED FROM PARTS AND FUNCTIONS OF THE BODY.

Generalia, ⋊ Topica.
Nervina.
  Cerebralia, Spinalia, Ganglionica, acting on the respective systems of nerves.
Muscularia.
Visceralia.
Absorbentia.
Cephalica, Anamnestica, improving the memory.
    Cosmetica.
    Ophthalmica.
    Nasalia.
    Acoustica, Otica.
    Odontica, Odontalgica, Dentifricia.
    Depilatoria, Psilothria, remove hairs.
Thoracica.
    Pectoralia, Arteriaca, Pneumonica, Pulmonica, Becchica.
    Cardiaca, Cordialia.

Abdominalia.
Stomachica.
Hepatica.
Splenica.
Antinephritica, Nephritca.
Uterina.
Aphrodisiaca, ⚹ Antaphrodisiaca, Antaphroditica, Sophisticantia, Sterilitantia.

IX. Terms applied to external and topical remedies.

Abstergentia, Detergentia, Abluentia.
Lubricantia, ⚹ Absorbentia.
Resolventia, Discutientia, ⚹ Suppurantia, Maturantia.
Emollientia, ⚹ Adstringentia, Roborantia externa, Indurantia.
Rubefacientia, ⚹ Refrigerantia.
Vesicatoria, Excoriantia, Exulcerantia, Corrosiva.
Escharotica, Erodentia, Phagedenica, Caustica, ⚹ Cicatrizantia, Epulotica.
Anaplerotica, Sarcotica, Consolidantia, Vulneraria, Glutinantia.
Exsiccantia, ⚹ Digerantia, Digestiva.
Mundificantia, Cathæretica.
Vulneraria, Traumatica, Agglutinantia.
Catagmatica, Syllotica, uniting fractured bones.

Terms derived from Medicines.

Aloedaria, Aloetica.
Aloephangina, a mixture of aloes and aromatics.
Mucilaginosa, Oleosa, &c.

Terms from imaginary virtues.

Archæalia, agreeable to Archæus.
Basilica, of noble power.
Heroica, of great virtue.

No. V.

PHYSIOLOGICAL CLASSIFICATION of the MATERIA MEDICA.

By the expression *Physiological Classification* is here meant an arrangement of substances according to the effects which they produce upon the body in a state of health, in contradistinction to their *therapeutical* effects, which depend on the presence of certain diseases. The physiological effect is constant both in health and disease; but the therapeutical effects are various according to the nature of the disease present. Thus, Cinchona is febrifuge if it stop an ague—antiseptic if it check gangrene—antispasmodic if it cure hysteria—anthelmintic if it expel worms. To a physiological classification of the Materia Medica authors have been gradually approaching; but a few therapeutical orders are still retained, as antispasmodics, lithontriptics, anthelmintics, antiseptics, &c.; while some systematic writers have admitted too much of hypothesis into their principle of classification. I have attempted to avoid therapeutical distinctions entirely, and to derive the characters of the orders from the obvious and recognized effects of medicinal agents.

External Agents act,

I. By nourishing the Body, . ALIMENTA,

a. Drink.....Potus.

When they act medicinally, . . . Diluentia.

b. Food.....Cibi.

When they act medicinally, . . . Demulcentia.

II. By Evacuation, ... EVACUANTIA.

a. By the skin insensibly, ... Diaphoretica.

——— sensibly, ... Sudorifica.

b. By the mucous membrane,

of the Nostrils, ... Errhina.

of the Lungs, ... Expectorantia.

of the Stomach, ... Emetica.

of the Intestines, ... Cathartica.

of the Uterus, ... Emmenagoga.

c. By Glandular Secretion,

The Kidneys, ... Diuretica.

The Salivary Glands, ... Sialogoga.

III. By exciting the vital powers,...STIMULANTIA.
a. Chiefly of the parts to which they are applied, } TOPICA.
Applied externally,
Causing redness, ... RUBEFACIENTIA.
——— serous secretion, . . . VESICANTIA.
——— purulent secretion, . . SUPPURANTIA.
Administered internally,
CONDIMENTA when alimentary.
When acting medicinally, . . CARMINATIVA.
b. Of the system generally, GENERALIA.
a. Obscurely, but more durably, . . } PERMANENTIA.
Producing no immediate obvious effect, ... } TONICA.
Constricting fibres and coagulating fluids, ... } ASTRINGENTIA.
b. More evidently but less durably, . } TRANSITORIA.
Acting on the organic functions,...CALEFACIENTIA.
Acting on the mental functions,...INEBRIANTIA.

IV. By depressing the vital powers,...DEPRIMENTIA.
Acting on the organic functions, . . . REFRIGERANTIA.
Acting on the mental functions, . . . NARCOTICA.

V. By chemical influence on the fluids, ... } CHEMICA.
Acidifying, ... ACIDA.
Alkalizing, ... ALKALINA.

II. OFFICINAL EMOLLIENTS AND DEMULCENTS.*

VEGETABLE.

I. *Amylaceous, Mucilaginous, or Saccharine.*†

MALVACEÆ.
Malva sylvestris—*Herba.*
Althæa officinalis—*Radix*—*Folia.*

LINEÆ.
Linum usitatissimum—*Semina.*

* That these lists may not extend to too great a length, I have thought it expedient to limit them to the articles which are officinal in some of the British Pharmacopœias, subjoining occasionally a short notice of some other substances.

† The substances in this order agree in being digested and assimilated when taken into the stomach. In their general effect on the system they are alimentary, and not medicinal. The action for which they are used in medicine is purely local. As fluids, they soften the tissues to which they are applied, and from their viscidity they protect it from irritants. In their nature they are either oily, or saccharine, or glutinous. The last section includes all such substances as gum, starch, albumen, and gelatine, and is the most bland of the whole; while the saccharine substances are not devoid of stimulus.

PAPAVERACEÆ.
Papaver somniferum—*Capsulæ*
LEGUMINOSÆ.
Acacia vera—*Gummi Arabicum*
Astragalus Tragacantha—*Gummi Tragacantha.*
Glycyrrhiza glabra—*Radix—extractum.*
ROSACEÆ.
Pyrus Cydonia—*Semina.*
Prunus domestica—*Fructus.*
UMBELLIFERÆ.
Daucus Carota—*Radix.*
COMPOSITÆ.
Anthemis nobilis—*Flores.*
Inula Helenium—*Radix.*
Tussilago Farfara—*Folia.*
Lactuca sativa—*Folia.*
BORAGINEÆ.
Anchusa tinctoria—*Radix.*
SOLANEÆ.
Solanum Dulcamara—*Stipites.*
LABIATÆ.
Marrubium vulgare—*Herba.*
URTICEÆ.
Ficus Carica—*Fructus.*
SMILACEÆ.
Smilax Sarsaparilla—*Radix.*
GRAMINEÆ.
Avena sativa—*Semina.*
Hordeum distichum—*Semina.*
Triticum hybernum—*Semina.*
Saccharum officinarum—*Saccharum.*
LICHENES.
Lichen Islandicus.

II. *Oleaginous.*

LINEÆ.
Linum usitatissimum—*Oleum.*
OLEINEÆ.
Olea Europæa—*Oleum.*
ROSACEÆ.
Amygdalus communis—*Semina—Oleum.*
PALMÆ.
Cocos butyracea—*Oleum palmæ.*

ANIMAL.

MUCOUS.
Ichthyocalla.
Cornu cervi—*Gelatina.*
Mel.
OLEAGINOUS.
Adeps suillus.
——— ovillus.
Cetaceum.
Cera.

III. OFFICINAL DIAPHORETICS AND SUDORIFICS.

VEGETABLE. *

RUTACEÆ.
Guaiacum officinale—*Cortex—Lignum—Resina.*
Ruta graveolens—*Herba.*
CRUCIFERÆ.
Sinapis nigra—*Semina.*
PAPAVERACEÆ.
Opium.
POLYGALEÆ.
Polygala Senega—*Radix.*
LEGUMINOSÆ.
Copaifera officinalis—*Resina.*
CAPRIFOLIÆ.
Sambucus nigra—*Flores.*
RUBIACEÆ.
Cephaëlis Ipecacuanha—*Radix.*

* Besides the vegetables here enumerated, many others act upon the skin, when their operation is directed to that organ by dilution conjoined with warmth. Of this nature are all vegetables which contain acrid resins, all spices, all fragrant herbs containing volatile oil, and all herbs possessed of a volatile pungent principle, as the cruciform plants and the onion tribe.

VALERIANEÆ.
Valeriana sylvestris—*Radix.*
COMPOSITÆ—CORYMBIFERÆ.
Inula Helenium—*Radix.*
Arnica montana—*Radix—Herba—Flores.*
CYNAROCEPHALEÆ.
Arctium Lappa—*Radix.*
ERICINEÆ.
Rhododendron Chrysanthum—*Folia.*
SOLANEÆ.
Capsicum annuum—*Fructus.*
Solanum Dulcamara—*Stipites.*
LABIATÆ.
Hyssopus officinalis—*Herba.*
Melissa officinalis—*Herba.*
Mentha pulegium—*Herba.*
Rosmarinus officinalis—*Herba.*
LABIATÆ.
Salvia officinalis—*Herba.*
LAURINEÆ.
Laurus Sassafras—*Cortex.*
——— nobilis—*Folia.*
——— Camphora-*Camphora.*
THYMALEÆ.
Daphne Mezereon—*Cortex.*
ARISTOLOCHIÆ.
Aristolochia Serpentaria–*Radix.*
EUPHORBIACEÆ.
Croton cascarilla—*Cortex.*
MONIMIÆ.
Dorstenia Contrayerva–*Radix*
SMILACEÆ.
Smilax Sarsaparilla—*Radix.*
JUNCEÆ.
Acorus Calamus—*Radix.*

ANIMAL.

Moschus.
Castoreum.

INORGANIC.

Alcohol.
Vinum.
Ætherea.
Olea volatilia.
Olea empyreumatica.
Ammoniæ sales.
Antimonialia.
Hydrargyrum *.

IV. OFFICINAL ERRHINES †.

VEGETABLE.

CUCURBITACEÆ.
Momordica Elaterium—*Succus spissatus.*
SOLANEÆ.
Nicotiana Tabacum—*Folia.*
LABIATÆ.
Hyssopus officinalis—*Herba.*
Lavandula vera—*Flores.*
Marrubium vulgare—*Herba.*
Melissa officinalis—*Herba.*
Mentha Pulegium—*Herba.*
——— viridis—*Herba.*
——— Piperita—*Herba.*
LABIATÆ.
Origanum Majorana—*Herba.*
——— vulgare—*Herba.*
Rosmarinus officinalis–*Herba.*
Salvia officinalis—*Herba.*
Teucrium Chamæpitys–*Herba*
——— Marum—*Herba.*
ARISTOLOCHIÆ.
Asarum Europæum—*Herba.*
EUPHORBIACEÆ.
Euphorbia officinarum—*Resina.*

* The most powerful and certain sudorifics are heat, and exercise of all kinds and in all forms, especially when assisted by diluents.

† Every substance possessed of any degree of acrimony becomes an errhine when applied to the membrane lining the nostrils; and if it be snuffed up in the form of a fine powder it is apt to prove sternutatory.

IRIDEÆ.
Iris Florentina—*Radix.*
COLCHICACEÆ.
Veratrum album—*Radix.*

GRAMINEÆ.
Saccharum officinarum—*Saccharum purificatum.*

INORGANIC.

Subsulphas hydrargyri.

V. OFFICINAL EXPECTORANTS.

A. TOPICAL,

Applied in the form of liquid to the fauces.

Emollients and Demulcents in general,

Applied in the form of gas or vapour to the mucous membrane of the lungs.

Nicotiana Tabacum—*Folia.*
Datura Stramonium—*Herba.*
Myrrha.
Pix liquida.
Olea volatilia.
Aqua.
Alcohol.
Ætherea.
Acidum Benzoicum.
——— aceticum.
Ammonia.
Ammoniæ carbonas.

B. GENERAL,

Taken into the stomach, and acting through the circulation.*

VEGETABLE.

TEREBINTHACEÆ.
Amyris Gileadensis—*Terebinthina.*
——— Kataf?—*Myrrha.*
Toluifera Balsamum—*Balsamum.*
POLYGALEÆ.
Polygala Senega—*Radix.*
LEGUMINOSÆ.
Copaifera officinalis—*Terebinthina.*
Myroxylon peruiferum—*Balsamum.*
UMBELLIFERÆ.
Bubon Galbanum—*Gummi-resina.*
UMBELLIFERÆ.
Ferula Assafœtida—*Gummi resina.*
Ferula Ferulago?—*Ammoniacum.*
Ferula? *Sagapenum.*
RUBIACEÆ.
Cephaëlis Ipecacuanha—*Radix*
EBENACEÆ.
Styrax officinale—*Balsamum.*
——— Benzoin—*Balsamum.*
SOLANACEÆ.
Datura Stramonium—*Semina.*
LABIATÆ.
Hyssopus officinalis—*Herba.*
Marrubium vulgare—*Herba.*

* The existence of this order of expectorants can no longer be doubted, since the experiments of recent physiologists have proved that medicinal substances are absorbed into the circulating system, and that they stimulate the organ by which they are excreted. That the mucous membrane of the lungs is occasionally employed for this purpose, appears from the smell of the breath being tainted by these unassimilable substances.

LABIATÆ.
Melissa officinalis—*Herba.*
Mentha Pulegium—*Herba.*
——— sativa—*Herba.*
Salvia officinalis—*Herba.*

ARISTOLOCHIÆ.
Asarum Europæum—*Folia.*

LICHENES.
Lichen Islandicus.

INORGANIC.

Tartras antimonii.

VI. OFFICINAL EMETICS.*

I. VEGETABLE.

CRUCIFERÆ.
Sinapis nigra–*Seminum pulvis.*

RUBIACEÆ.
Cephaëlis Ipecacuanha–*Radix*

COMPOSITÆ—CORYMBIFERÆ.
Anthemis nobilis—*Flores.*

SOLANEÆ.
Nicotiana Tabacum—*Folia.*

ARISTOLOCHIÆ.
Asarum Europæum—*Folia.*

LILIACEÆ.
Scilla maritima—*Bulbus.*

II. INORGANIC.

Ammoniæ carbonas.
Antimonium tartarizatum.
Zinci sulphas.
Cupri sulphas.

VII. OFFICINAL CATHARTICS.

I. VEGETABLE.

a. *Emollient, Mucilaginous, Saccharine.*

VIOLACEÆ.
Viola odorata—*Flores.*

SARMENTACEÆ.
Vitis vinifera—*Baccæ siccatæ.*

LEGUMINOSÆ.
Cassia fistula—*Leguminis pulpa.*
Tamarindus Indica–*Legumen.*

ROSACEÆ.
Prunus domestica—*Fructus siccatus.*
Rosa canina—*Fructus.*

CAPRIFOLIÆ.
Sambucus nigra—*Baccæ.*

COMPOSITÆ—CICHORACEÆ.
Leontodon Taraxacum–*Radix*

OLEINEÆ.
Fraxinus ornus—*Succus concretus—Manna.*

URTICEÆ.
Ficus carica–*Fructus siccatus.*

GRAMINEÆ.
Hordeum distichon—*Semina.*
Saccharum officinarum—*Saccharum impurum.*

b. *Oily.*

OLEINEÆ.
Olea Europæa—*Oleum.*

EUPHORBIACEÆ.
Ricinus communis—*Oleum.*
Croton Tiglium—*Oleum.*

CONIFERÆ.
Pinus sylvestris—*Oleum volatile.*

* The number of substances capable of exciting vomiting is very great. The operation of all of them is assisted by repletion of the stomach; and where great torpor exists, titillation of the posterior fauces will sometimes provoke vomiting.

c. *Resinous.*

GUTTIFERÆ.
Gambogia.
TEREBINTHACEÆ.
Pistacia Terebinthus—*Terebinthina Chia.*
Amyris Gileadensis—*Terebinthina.*
LEGUMINOSÆ.
Copaifera officinalis—*Terebinthina.*
CONVOLVULACEÆ.
Convolvulus Scammonia—*Resina.*
——— Jalapa—*Radix*—*Resina.*
EUPHORBIACEÆ.
Euphorbia officinarum—*Resina*
CONIFERÆ.
Pinus Larix—*Terebinthina.*
——— Canadensis—*Terebinthina.*

d. *Extractive, nauseous, bitter, or acrid.*

LINEÆ.
Linum catharticum—*Herba.*
CRUCIFERÆ.
Sinapis alba—*Semina integra.*
FRANGULACEÆ.
Rhamnus catharticus—*Baccæ.*
LEGUMINOSÆ.
Cassia Senna—*Folia.*
Spartium Scoparium—*Summitates.*
Geoffroya inermis—*Cortex.*
CAPRIFOLIÆ.
Sambucus nigra—*Cortex.*
COMPOSITÆ—CINAROCEPHALÆ.
Arctium Lappa—*Radix.*
CUCURBITACEÆ.
Cucumis colocynthis—*Pepones.*
Momordica Elaterium—*Succus concretus fructus.*
GENTIANEÆ.
Menyanthes trifoliata—*Herba.*
Spigelia Marilandica—*Herba.*
LABIATÆ.
Gratiola officinalis—*Herba.*
IRIDEÆ.
Iris Florentina—*Radix.*
FILICES.
Aspidium Filix-mas—*Radix.*

e. *Narcotic.*

RANUNCULACEÆ.
Helleborus niger—*Radix.*
——— fœtidus—*Radix.*
SOLANACEÆ.
Nicotiana Tabacum—*Folia.*
COLCHICACEÆ.
Colchicum autumnale—*Bulbus.*
Veratrum album—*Radix.*

f. *Astringent.*

ROSACEÆ.
Rosa centifolia—*Petala.*
POLYGONEÆ.
Rheum Turcicum—*Radix.*
Rumex aquaticus—*Radix.*

II. ANIMAL.

Emollient.

Honey.

III. INORGANIC.

a. *Saline.*

Magnesia.
Magnesiæ carbonas.
——— sulphas.
Potassæ sulphas.
——— supersulphas.
——— tartras.

Potassæ supertartras.
——— acetas.
Sodæ murias.
Sodæ phosphas.
—— sulphas.
—— et potassæ tartras.

b. *Metallic.*

Calomelas.
Pilulæ Hydrargyri.
Pulvis Antimonialis.
Tartras Antimonii.

c. *Inflammable.*

Sulphur.

VIII. OFFICINAL EMMENAGOGUES. *

VEGETABLE.

RANUNCULACEÆ.
Helleborus niger.
RUTACEÆ.
Ruta graveolens.
GUTTIFERÆ.
Gambogia.
CRUCIFERÆ.
Sinapis alba—*Semina.*
UMBELLIFERÆ.
Gummi fœtida.
RUBIACEÆ.
Rubia tinctorum—*Radix.*
VALERIANEÆ.
Valeriana officinalis—*Radix.*
COMPOSITÆ—CORYMBIFERÆ.
Artemisia Abrotanum—*Herba.*
Tanacetum vulgare—*Herba.*
ARISTOLOCHIÆ.
Aristolochia Serpentaria.
CONIFERÆ.
Juniperus Sabina—*Folia.*
IRIDEÆ.
Crocus sativus—*Stigmata.*
LILIACEÆ.
Aloës Socotorina—*Extractum.*

IX. OFFICINAL DIURETICS. †

1. VEGETABLE.

a. *Stimulant.*

TEREBINTHACEÆ.
Gambogia.
LOMENTACEÆ.
Copaifera officinalis—*Terebinthina.*
Spartium Scoparium—*Summitates.*
MYRTI.
Melaleuca Leucadendron—*Oleum volatile.*
CONIFERÆ.
Juniperus communis—*Oleum volatile.*
Pinus sylvestris—*Oleum volatile.*

* The existence of this class has been altogether doubted; and when we consider the great variety of causes upon which the defect of the menstrual secretion may depend, it may be granted that the power of exciting the secretion in all cases is not possessed by any substance. But upon the same grounds, the existence of many other classes of medicines might be denied. A better founded objection would be, that the uterus is not an organ intended for the elimination of foreign matters, which therefore seldom reach it. Increased action may be excited in it by any stimulus directly applied, as electricity, friction, or heat; or by sympathy, by stimulating the rectum, bladder, and neighbouring parts.

† The action of diuretics, and indeed of internal medicines in general, has been much elucidated by the experiments of recent physiologists, especially of Dr Wohler and Dr

b. *Narcotic.*

COMPOSITÆ—CICHORACEÆ.
Lactuca virosa—*Succus concretus.*
Leontodon Taraxacum—*Radix.*

SOLANEÆ.
Nicotiana Tabacum—*Folia.*

PERSONATÆ.
Digitalis purpurea—*Folia.*
Gratiola officinalis—*Herba.*

Stehberger. They have ascertained more precisely than had been previously done, the state in which, and the time at which, various substances appear in the urine after being taken into the stomach.

1. *Substances which pass off by Urine unchanged.*

Carbonate of potass.
Nitrate of potass.
Chlorate of potass.
Sulpho-cyanate of potass.
Hydrosulphuret of potass.
Ferro-cyanate of potass.
Silicate of potass.
Tartrate of nickel and potass.
Borax.
Muriate of barytes.
Astringency of uva ursi.

Colouring Principles.

Indigo.
Madder.
Rhubarb.
Gamboge.
Logwood.
Red radishes.
Mulberry.
Black cherry.
Cassia fistula.
Elder rob.

Odorous principles somewhat altered.

Oil of Turpentine.
— of Juniper.
Valerian.
Saffron.
Assafœtida.
Garlic.
Castor.
Opium.

The narcotic principle of the Agaricus muscarius.

2. *Substances which pass in a state of combination.*

Sulphur, as sulphuric acid and sulphuretted hydrogen.
Iodine, as hydriodic acid.
Oxalic, Tartaric, Gallic, Succinic, Benzoic } acids appear in combination with an alkali.

3. *Substances which pass in a decomposed state.*

Tartrate, Citrate, Malate, Acetate } of Potass or Soda { are changed into the Carbonate of the same alkali.

Hydro-sulphuret of Potass, changed in a great measure into the sulphate of potass.
Oxy-ferro-cyanate of Potass, changed into the Ferro-cyanate of potass.

4. *Substances which did not re-appear in the Urine.*

Iron.
Lead.
Alcohol.
Sulphuric ether.
Dippel's oil.
Musk.
Cochineal.
Litmus.
Sap green.
Alkanet.
Quassia.
Camphor.

Carbonic acid not increased in quantity.

Madder and Indigo appeared in the urine 15 minutes after they were taken into the stomach; Rhubarb and Gallic Acid in 20; Logwood in 25; Vaccinium myrtillus in 30; Black Cherries and Uva Ursi in 45; pulp of Cassia fistula in 55; Ferro-prussiate of Potass in 66; and Elder rob in 75.

LILIACEÆ.
Scilla maritima—*Bulbus.*

COLCHICACEÆ.
Colchicum autumnale–*Bulbus.*

2. ANIMAL.

Cantharis vesicatoria.

3. INORGANIC.

a. *Stimulant.*

1. Volatile.
   Alcohol.
   Spiritus ætheris nitrosi.
2. Fixed.
   Murias ferri.
   ——— hydrargyri.
   Pilula hydrargyri.
   Tartras antimonii.

b. *Refrigerant.*

1. Rendering the urine acid.
   Acida mineralia diluta.
2. Rendering the urine alkaline.
   Potassæ carbonas.
   ——— supercarbonas.
   ——— acetas.
   ——— tartras.
   ——— supertras.
   Sodæ carbonas.
   —— supercarbonas.
   Sodæ et potassæ tartras.
3. Not rendering the urine either acid or alkaline.
   Potassæ nitras.
   ——— chloras.
   ——— hydrosulphuretum.
   ——— ferro-cyanas.
   Sodæ subboras.
   Barytæ murias.

X. OFFICINAL SIALAGOGUES *.

VEGETABLE.

HESPERIDEÆ.
Citrus Aurantium—*Fructus immaturi—Curaçao.*

CRUCIFERÆ.
Cochlearia Armoracia–*Radix.*

TEREBINTHACEÆ.
Pistacia Lentiscus—*Resina—Mastiche.*

POLYGALEÆ.
Polygala Seneka—*Radix.*

LEGUMINOSÆ.
Pterocarpus Draco—*Resina.*

MYRTI.
Myrtus Pimenta—*Fructus.*
Eugenia caryophyllata—*Fructus.*

UMBELLIFERÆ.
Angelica Archangelica-*Radix.*

COMPOSITÆ—CORYMBIFERÆ.
Anthemis Pyrethrum–*Radix.*

SOLANEÆ.
Nicotiana Tabacum—*Folia.*
Capsicum annuum—*Fructus.*

LAURINEÆ.
Laurus Cassia—*Fructus immaturi.*

MYRISTICEÆ.
Myristica moschata—*Fructus.*

THYMALEÆ.
Daphne Mezereon—*Cortex.*

URTICEÆ.
Piper nigrum—*Baccæ.*

* Sialagogues, besides the increased flow of saliva, cause also an increased secretion of mucus from the membrane of the mouth and fauces. Mercury is the only substance which produces salivation through the medium of the circulation; but every acrid substance chewed, or applied directly to the orifices of the salivary ducts, acts as a topical sialagogue. The stimulus of food received into the stomach, and even the sight or expectation of food, produces an increased secretion of saliva.

URTICEÆ.
Piper longum—*Fructus.*
DRYMYRRHIZÆ.
Amomum Zingiber—*Radix.*
——— Cardamomum—*Fructus.*
IRIDEÆ.
Iris Florentina—*Radix.*
JUNCEÆ.
Acorus Calamus—*Radix.*

INORGANIC.

Hydrargyrum.

XI. OFFICINAL EPISPASTICS; INCLUDING RUBEFACIENTS AND ESCHAROTICS.

VEGETABLE.

RANUNCULACEÆ.
Delphinium Staphisagria—*Semina.*
Ranunculus acris—*Herba.*
RUTACEÆ.
Ruta graveolens—*Herba.*
Guaiacum officinale—*Oleum.*
CRUCIFERÆ.
Sinapis alba—*Seminum pulvis.*
Cochlearia Armoracia—*Radix.*
TEREBINTHACEÆ.
Amyris elemifera—*Resina.*
MYRTI.
Melaleuca Leucadendron—*Oleum Cajeput.*
Eugenia caryophyllata—*Fructus oleum volatile.*
UMBELLIFERÆ.
Gummi-resina Ammoniacum.
Gummi-resina Sagapenum.
Bubon Galbanum—*Gummi-resina.*
Pastinaca Opoponax—*Gummi-resina.*
COMPOSITÆ—CORYMBIFERÆ.
Anthemis Pyrethrum—*Radix.*
SOLANEÆ.
Capsicum annuum—*Baccæ.*
LAURINEÆ.
Laurus Cinnamomum—*Oleum.*
——— Sassafras—*Oleum.*
——— Camphora—*Camphora.*
THYMALEÆ.
Daphne Mezereon—*Cortex.*
EUPHORBIACEÆ.
Euphorbia officinarum—*Resina*
URTICEÆ.
Piper nigrum—*Baccæ.*
——— longum—*Fructus.*
CONIFERÆ.
Pinus Larix—*Terebinthina—Oleum terebinthinæ—Resina.*
Juniperus Sabina—*Folia—Oleum volatile.*
AROIDEÆ.
Arum maculatum—*Radix recens.*
DRYMYRRHIZÆ.
Zingiber officinale—*Radix.*
LILIACEÆ.
Allium sativa—*Bulbus.*
——— Cepa—*Bulbus.*

ANIMAL.

Cantharis vesicatoria.

INORGANIC.

Alcohol fortius.
Æther sulphuricus.
Acida mineralia fortiora.
Acidum aceticum fortius.
Ammonia.
Potassa.
Calx.
Calcis murias.
Argenti nitras.
Hydrargyri murias.
——— oxidum rubrum.
Cupri sulphas.

Cupri subacetas.
Zinci sulphas.

Antimonii tartras.
——— murias.

XII. OFFICINAL CARMINATIVES.

UMBELLIFERÆ.
Anethum Fœniculum-*Semina.*
——— graveolens--*Semina.*
Angelica archangelica–*Radix.*
Carum Carui—*Semina.*
Coriandrum sativum–*Semina.*
Cuminum Cyminum–*Semina.*
Daucus Carota—*Semina.*
Pimpinella Anisum—*Semina.*

LABIATÆ.
Hyssopus officinalis—*Herba.*
Lavandula Spica—*Flores.*
Melissa officinalis—*Herba.*
Mentha Piperita—*Herba.*
——— Pulegium—*Herba.*
——— viridis—*Herba.*
Origanum Majorana—*Herba.*
——— vulgare—*Herba.*
Rosmarinus officinalis–*Herba.*
Salvia officinalis—*Herba.*

XIII. OFFICINAL SPICES AND ACRID STIMULI.

MAGNOLIACEÆ.
Drymis aromatica—*Cortex Winteri.*

RUTACEÆ.
Guaiacum officinale—*Lignum —Cortex—Resina.*
Ruta graveolens—*Herba.*

HESPERIDEÆ.
Citrus aurantium–*Cortex fructûs.*
——— medica–*Cortex fructûs.*

MELIACEÆ.
Canella alba—*Cortex.*

POLYGALEÆ.
Polygala Senega—*Radix.*

MYRTI.
Melaleuca Leucadendron—*Oleum Cajeputi.*
Myrtus Pimenta—*Fructus.*
Eugenia caryophyllata–*Fructus.*

COMPOSITÆ—CORYMBIFERÆ.
Anthemis Pyrethrum–*Radix.*
Arnica montana--*Radix–Flores—Folia.*

SOLANEÆ.
Capsicum annuum—*Fructus.*

LAURINEÆ.
Laurus Cinnamomum–*Cortex.*
———Cassia—*Cortex.*
———nobilis—*Baccæ.*

LAURINEÆ.
———Sassafras—*Lignum.*
———Camphora–*Camphora.*

MYRISTICEÆ.
Myristica moschata—*Nux—Macis.*

ARISTOLOCHIÆ.
Aristolochia Serpentaria–*Radix.*
Asarum Europæum—*Folia.*

EUPHORBIACEÆ.
Croton Eleutheria—*Cortex.*

MONIMIÆ.
Dorstenia Contrayerva—*Cortex.*

URTICEÆ.
Piper nigrum—*Fructus.*
—— longum—*Fructus.*
—— Cubeba—*Fructus.*

CONIFERÆ.
Juniperus Sabina—*Folia.*

AROIDEÆ.
Arum maculatum—*Radix.*

DRYMYRRHIZÆ.
Zingiber officinale—*Radix.*
Amomum Zedoaria—*Radix.*
Amomum Cardamomum—*Fructus.*

JUNCEÆ.
Acorus Calamus—*Radix.*

XIV. OFFICINAL TONICS.

I. VEGETABLE.

MENISPERMEÆ.
Menispermum palmatum—*Radix Colombæ.*
SIMARUBEÆ.
Quassia excelsa—*Cortex.*
Quassia Simaruba—*Cortex.*
RUTACEÆ.
Bonplandia trifoliata—*Cortex Angusturæ.*
RUBIACEÆ.
Cinchona officinalis—*Cortex.*
COMPOSITÆ—CORYMBIFERÆ.
Anthemis nobilis—*Flores.*
COMPOSITÆ—CORYMBIFERÆ.
Artemisia Absinthium—*Herba*
——— Santonica—*Summitates.*
Tanacetum vulgare—*Herba.*
——— CYNAROCEPHALÆ.
Cnicus benedictus—*Herba.*
GENTIANEÆ.
Gentiana lutea—*Radix.*
Menyanthes trifoliata—*Herba.*
Spigelia Marilandica—*Herba.*
Chironia Centaurium—*Summitates.*

II. MINERAL.

Saline.

Murias sodæ.
——— calcis.
Murias barytæ.

Metallic.

Arsenicum.
Ferrum.
Zincum.
Cuprum.
Argentum.
Stannum.
Bismuthum.

XV. OFFICINAL ASTRINGENTS.

VEGETABLE.

MELIACEÆ.
Swietenia Mahagoni—*Cortex.*
——— febrifuga—*Cortex.*
ACERINEÆ.
Æsculus Hippocastanum—*Cortex.*
POLYGALEÆ.
Krameria triandra—*Radix Rhataniæ.*
LEGUMINOSÆ.
Acacia vera—*Succus spissatus.*
Acacia Catechu—*Extractum.*
Hæmatoxylon Campechianum—*Extractum ligni.*
Pterocarpus Africanus—*Succus spissatus, Kino verum.*
ROSACEÆ.
Agrimonia Eupatoria—*Herba.*
Geum urbanum—*Radix.*
ROSACEÆ.
Rosa Gallica—*Petala.*
Tormentilla erecta—*Radix.*
SALICARIÆ.
Lythrum Salicaria—*Radix.*
MYRTI.
Punica Granatum—*Cortex radicis*—*Flores*—*Cortex* (*Epicarpium*) *fructus.*
Eucalyptus resinifera—*Succus spissatus,* varietas *Kino.*
RUBIACEÆ.
Cinchona rubra—*Cortex.*
Rubia tinctorum—*Radix.*
ERICINEÆ.
Arbutus Uva-ursi—*Folia.*
POLYGONEÆ.
Polygonum Bistorta—*Radix.*
Rheum—*Radix.*

POLYGONEÆ.
Rumex aquaticus—*Radix.*
LAURINEÆ.
Laurus Cinnamomum—*Cassia—Cortex.*
AMENTACEÆ.
Quercus Robur.—*Cortex.*

AMENTACEÆ.
Quercus infectoria—*Gallæ.*
Salix alba, fragilis, Caprea—*Cortex.*
Ulmus campestris—*Cortex.*
CONIFERÆ.
Pinus Larix—*Cortex.*

Mineral Styptics.

Acetas plumbi.
Sulphas cupri.
——— zinci.
Murias ferri.
Nitras argenti.

Saline Styptics.

Acidum sulphuricum.
——— aceticum.
Alumen.

XVI. OFFICINAL RESINOUS STIMULI.

RUTACEÆ.
Guaiacum officinale—*Resina.*
TEREBINTHACEÆ.
Amyris Gileadensis—*Terebinthina.*
Pistacia Lentiscus—*Resina.*
——— terebinthus—*Terebinthina.*
Toluifera balsamum—*Balsamum.*
LEGUMINOSÆ.
Copaifera officinalis—*Terebinthina.*
Myroxylon peruiferum—*Balsamum.*

EBENACEÆ.
Styrax officinale—*Balsamum—Resina.*
———Benzoin—*Balsamum—Resina.*
EUPHORBIACEÆ.
Euphorbia officinarum-*Resina*
CONIFERÆ.
Pinus; plurimæ species, *Terebinthina vulgaris.*
——————— *Veneta.*
Balsamum Canadense—Terebinthina.
Resina sponte concreta.
Juniperus Lycia—*Olibanum.*

XVII. OFFICINAL FŒTID STIMULI.—ANTISPASMODICS OF AUTHORS.

VEGETABLE.

UMBELLIFERÆ.
Bubon Galbanum—*Gummi-resina.*
Ferula Assafœtida—*Gummi-resina.*
Pastinaca Opoponax—*Gummi-resina.*

UMBELLIFERÆ.
Gummi-resina Ammoniacum.
——————— Sagapenum.
VALERIANEÆ.
Valeriana sylvestris—*Radix.*
IRIDEÆ.
Crocus sativa—*Stigmata.*

ANIMAL.

Moschus.
Castoreum.

INORGANIC.

Petroleum.
Empyreumatic Oils—*Animal—Dippel's oil—Burnt feathers—Oil of Amber.*
Volatile Oils—*Oil of Turpentine—Oil of Cajeput.*

There are other substances which act as Antispasmodics, upon different principles:

Narcotics—as *Opium.*
Intoxicators—as *Ether.*
Tonics—as *Wormwood.*
Mineral Tonics—as *Copper—Silver—Zinc.*

XVIII. OFFICINAL VOLATILE PUNGENT STIMULI,

ONE ORDER OF ANTISCORBUTICS.

CRUCIFERÆ.
Cardamine pratensis—*Herba.*
Cochlearia Armoracia–*Radix.*
——— officinalis—*Herba.*
Sinapis alba—*Semina.*
——— nigra—*Semina.*

LILIACEÆ.
Allium sativum—*Bulbus.*
——— Cepa—*Bulbus.*
——— Porrum—*Radiculæ.*

There are other substances which are also useful in scurvy, but they operate upon very different principles.

Acid Fruits—as *Lemons.*
Acid Vegetables—as *Sorrel.*
Bitter Vegetables–as *Dandelion.*
Spices—as *Winter's Bark*
Fresh Animal Food.

XIX. OFFICINAL REFRIGERANTS. *

VEGETABLE. †

HESPERIDEÆ.
Citrus Aurantium—*Fructus succus.*
——— medica–*Fructus succus.*

GERANIACEÆ—OXALIDEÆ.
Oxalis Acetosella.

LEGUMINOSÆ.
Tamarindus Indica–*Legumen.*

ROSACEÆ.
Prunus domestica—*Fructus.*
Rosa canina—*Fructus.*

COMPOSITÆ—CICHORACEÆ.
Lactuca sativa—*Herba.*

POLYGONEÆ.
Rumex Acetosa—*Folia.*

URTICEÆ.
Morus nigra—*Fructus.*

INORGANIC.

Dilute Mineral Acids, especially the Sulphuric.
All Vegetable Acids.

* The most powerful, if not the only, refrigerant is cold; cold air, cold bath, cold drink; all of which not only abstract heat from the body, but have a tendency to reduce the calorific function. But the substances commonly considered as refrigerants act by evacuation or by inducing nausea.

† There are many other subacid fruits, which are used as refrigerant articles of diet, although not officinal; also some animal products, as butter-milk, and acid whey.

All Acid Salts, as supersulphate of potass and alumina, and supertartrate of potass.
Neutral Salts, largely diluted, especially
Nitrate of Potass.
Subborate of Soda.
Some Metallic Salts,
Acetate of Lead.
Tartrate of Antimony.

XX. OFFICINAL NARCOTICS.

VEGETABLE.

RANUNCULACEÆ.
Aconitum Napellus—*Folia.*
Helleborus niger—*Herba.*
Delphinium Staphisagria—*Semina.*
MENISPERMEÆ.
Menispermum Cocculus—*Semina.*
PAPAVERACEÆ.
Opium.
Papaver somniferum-*Capsulæ.*
———-Rhœas—*Petala.*
TEREBINTHACEÆ.
Rhus Toxicodendron—*Folia.*
ROSACEÆ.
Amygdalus communis–*Amygdalæ amaræ.*
———— Persica—*Folia.*
Prunus Laurocerasus—*Folia.*
UMBELLIFERÆ.
Conium maculatum—*Folia.*
COMPOSITÆ—CICHORACEÆ.
Lactuca virosa—*Succus concretus.*
——— sativa—*Succus concretus.*
STRYCHNEÆ.
Strychnos Nux vomica–*Nuces*
SOLANEÆ.
Atropa Belladonna—*Folia.*
Datura Stramonium–*Herba–Capsulæ—Semina.*
Hyoscyamus niger—*Folia.*
Nicotiana Tabacum—*Folia.*
Verbascum Thapsus—*Folia.*
PERSONATÆ.
Digitalis purpurea—*Folia.*
Gratiola officinalis—*Herba.*
LAURINEÆ.
Laurus Camphora–*Camphora.*
Crocus sativus—*Stigmata.*
COLCHICACEÆ.
Colchicum autumnale–*Bulbus*

INORGANIC.

Acidum hydrocyanicum.
Acidum oxalicum.

XXI. OFFICINAL ACIDS.

Acidum sulphuricum.
——— nitricum.
——— muriaticum.
——— aceticum.
Acidum citricum.
——— tartaricum.
——— benzoicum.
——— succinicum.

XXII. OFFICINAL ALKALINES.

Potass.
Soda.
Ammonia.
Lime.
Magnesia.
and their combinations with carbonic acid.

No. VI.

ON THE

CLASSIFICATION OF TASTES AND SMELLS.

In the year 1827, with the view of promoting emulation among my pupils in the class of Materia Medica, and of obtaining from their industry and ingenuity greater knowledge of a subject which seemed to me important, but too much neglected, probably on account of its difficulty, I proposed as the subject of a prize essay a Classification of Tastes and Smells, chiefly with the view of affording assistance to the more accurate description of drugs. The prize was awarded to the following essay, which I trust my readers will concur with me in considering as a valuable contribution to the elucidation of an obscure and difficult subject. The recent perusal of Cloquet's learned volume * has satisfied me, if any confirmation of my favourable opinion had been required, that the essay of Mr Greeves is superior to any thing yet published on those branches of the subjects which it is its object to investigate. —(A. D.)

An Essay on the Varieties and Distinction of Tastes and Smells, and on the Arrangement of the Materia Medica. By Augustus Fred. Ad. Greeves, Surgeon, Nottingham, Member of the Royal Colleges of Surgeons, Edinburgh and London.

Preface.

The first idea of the following essay was occasioned by a remark made by Professor Duncan in his lectures on Materia Medica in the year 1825–6, concerning the importance of a scientific division of smells, and by a subsequent observation that the Professor had himself examined the subject, but without a satisfactory result.

Since that period the writer of the following pages has occupied much of his leisure in observing the varieties of tastes and smells; and at a very short notice he has thrown his observations into the following form, with the desire of subjecting them to the criticism, at least, of the instigator of them.

The essay is purely analytical. The study of an obscure sub-

* Ophrésiologie, ou Traité des Odeurs, du Sens et des Organes de l'Olfaction, par Hippol. Cloquet, M. D. 2de edit. 8vo. Paris 1821. Pp. 758.

ject is like unravelling the ball of the silk-worm. It cannot be unwound without first separating the extraneous matter that clogs it together, and prevents the disentangling, and even the discovery of the thread which is to unravel the whole. In a similar manner the writer has endeavoured to treat his subject, by removing the various agencies which obscure and perplex the distinction of Tastes and of Smells, and by tracing them to their simplest forms. He has rigorously confined himself to the actual subject of inquiry, the distinction and classification of Tastes and Smells, and has avoided (as far as was compatible with perspicuity) the consideration of those important correlative questions, of the nature of *sensation*, and the physiology of tasting and of smelling, of which the limits of these pages would not include the discussion.

The writer fears that he will be accused of neglecting or underrating the opinions of authors, but he feels justified in saying that the discordancy of their notions affords strong presumption of their inaccuracy. Besides, he wished his essay to be, not a compilation, but the entire result of his own observations and reflection, and such it must be understood to be.

He also fears that it will be urged against him that he has not followed up the subject with that minuteness which might be effected; but in a subject like this, where every part as yet presents doubt and obscurity, he would prefer substantiating a few solid facts, to raising the most splendid theory that ever glittered, a fragile bubble, but to burst. When the foundation laid is true, the superstructure is easily erected; but when the foundation is bad, the higher the building is carried, the more certain will be its fall. He has done enough, however, he thinks, to show that the sensations of Tastes and of Smells may be rendered as accurately and as minutely useful as those of the organs of seeing or hearing, and can venture to hope that his classification of the substances of the Materia Medica will be found of real practical utility. If these be the results, his labour will be amply rewarded.

Paris, August 1, 1828.

An Essay on the Arrangement of the Materia Medica.

The arrangement of the substances composing the Materia Medica, according to their tastes and smells, is a work which presents numerous difficulties. The complexity of many of these sensations, and, still more, the indefinite terms used to express them, the tedious labour of the study, and the difference of individual perceptions, have so powerfully retarded the knowledge of these characters of bodies, that an accurate and scientific classifi-

cation of them offers an extensive field, in the domain of science, as yet almost untrodden.

It is therefore absolutely necessary, previously to attempting an arrangement of the Materia Medica upon this plan, to define and arrange correctly the numerous sensations included in the denomination of Tastes and Smells. It would be unnecessary to examine, if it were possible to explain, the nature of these sensations or to describe them. But to examine their differences, to ascertain their *composition*, and to classify them according to their affinities, is both possible and indispensable to our undertaking. In order to facilitate this examination, the subjects of Tastes and of Smells shall be separately considered. As the study of Tastes presents considerably fewer difficulties than that of Smells, and as a thorough comprehension of the former will facilitate the attainment of the latter, it shall first engage our attention.

Part the First.

OF TASTES AND SMELLS.

§ of tastes.

A true taste or flavour is the specific impression communicated by the contact of the recent surface of a sapid substance with the organ of gustation.

Different substances affect that organ in different manners, and language affords us various terms to designate these different sensations. Authors have endeavoured to reduce them to certain principles or elements. Thus Galen has enumerated eight kinds: the austere, the acerb, the bitter, the saline, the acrid, the acid, the sweet, and the fatty or oily. Haller made twelve: the insipid, the sweet, the bitter, the acrid, the acerb, the acid, the saline, the urinous, the spirituous, the aromatic, the nauseous, and the putrid. Linnæus, who opposed them to each other, counted ten: sweet, acrid; oily, styptic; bitter, acid; mucous, saline; aqueous, and dry. Boerhaave enumerates the acid, the sweet, the bitter, the saline, the acrid, the alkaline, the vinous, the spirituous, the aromatic, the acerb. The diversity of these arrangements is enough to excite doubt of the accuracy of all of them; and there is not one of them which, if attentively considered, will be found unobjectionable. To discuss, however, each of them separately, is more than the limits of this essay will permit. The objections to them shall, however, be illustrated in the research upon simple tastes, which we now commence.

In prosecuting this investigation we must proceed analytically, carefully putting aside all that is extraneous, and preserving all that is essential.

For this purpose the organ of gustation must be considered as possessing that function only. It must be separated, as it were, from its connections with the rest of the body, and deprived even of its sense of touch. For so extensive and so intimate are its connections with the chief organs of the body, and so acute is its faculty of touch, that its *specific* sensations of taste are materially modified, and their distinction much obscured, by their mixture or combination with these *common* sensations. Hence a source of error, which has ever misled those who have pursued this study: and hence an improper nomenclature, which has still more perplexed the subject.

For instance, the taste denominated *nauseous* is a complex sensation. It comprehends not only a *specific* sensation of gustation, but also a sympathetic *common* impression (or sensation) in the stomach, consisting of a disposition to vomit. The *acrid* taste offers another example of a complex taste. It consists of a specific impression or flavour, (generally a compound of the bitter class,) and a common impression of heat, perceived by the sense of touch of the organ of gustation.

Upon a similar principle to this it is that the strong volatile oils can scarcely be distinguished from each other in their undiluted state. Their powerful impression upon the sense of touch overwhelms as it were the specific impression of their flavour. But if the oil be diluted the sensation of heat is diminished, and that of the true flavour, although weakened, yet being less disguised is more easily distinguishable: as a colour made of a lighter shade becomes diminished in degree, but remains *in its nature* the same.

Besides the sensation of heat, the function of touch, possessed by the organ of tasting, disguises flavours in another manner: Thus we have substances which impress a sensation of constriction, corrugation, or roughness, such as galls, port wine, and some acids.

Another cause of error in the discrimination of tastes is the confounding them with smells. Of this there is a remarkable example in those substances which are called aromatics, which, it seems now pretty well ascertained, derive their peculiar qualities from their smell.

Besides this erroneous confounding of common with specific sensations,* the mind has great influence in obscuring the sensations, and particularly those of taste. Thus disgusting substances taste

* It may be as well to state, that by the term *specific sensation* we mean the *true taste*, or *flavour* (as it would be better to term it;) and by *common impression* all other sensations excited through the organ of tasting. These may be remote or *sympathetic*, as in the nauseous, or direct or *local*, as in the volatile oils, galls, &c. All tastes which are connected with common impressions are *complex*.

very differently, accordingly as we are acquainted with their nature or are ignorant of it; and thus substances of a repulsive odour are almost invariably imagined to possess an equally disagreeable taste. A remarkable illustration of this observation has been frequently observed by the author in those who are commencing to drink the sulphureous water of Harrowgate. This water (the taste of which has been compared to that of rotten-eggs and gunpowder, and many other equally agreeable mixtures!) has a smell so disgusting, that the stranger is afraid to taste it. After hesitating long enough to fill his nostrils full of its odour, he squeezes it down with much difficulty, and thinks its taste the most horrible imaginable. But after a little experience he finds, that if he pours it down in one draught, that is, if he prevents inspiration, and therefore smelling, he tastes nothing but a slightly bitter saline.

Not less than complex tastes, have compound ones, or such as are formed by the combination of simple true tastes, been confounded. Simple flavours have been mistaken for each other; weak ones for the absence of taste.

Independent of all these sources of error, the state of the atmosphere, the health of the experimenter, his temperament, idiosyncrasy, age, sex, materially influence his perceptions. For not only according to his experience and health, but even according to his prejudices, will he apprehend differently the sensations which may be impressed upon his organs of tasting.

There are yet other causes which obscure the discrimination of tastes, even after divesting them of their connection with this extensive series of concomitant or sympathetic impressions, and reducing them to their most elementary form. Thus each simple taste may be modified according to its intensity, according to the part of the organ of gustation which it affects, according to the duration of it, and accordingly as it is single or double, *i. e.* passes from one taste into another.

Thus a flavour may be composed of a strong bitter and weak sweet, or weak bitter and strong sweet. Thus also tastes may affect the whole organ of gustation when they are called *general*, or they may be *partial;* a taste for instance may affect the tongue only, when it is *lingual;* or it may affect the palate only, and is then *palatine;* or the fauces and throat, when it is *guttural.* When it affects the gustatory papillæ only, or more than the rest of the gustatory surface, it produces the sensation called *tingling.*

Tastes also differ according to their duration. They may be *transient* or *permanent;* or they may offer a changeable nature, commencing with one kind and passing into another, when they may be called *alternate;* as the *Solanum dulcamara* and the white oxide of arsenic.

The operation of these modifying agents and circumstances is

abundantly sufficient to show us how all known tastes may be derived from a very few elementary flavours. In our search after these, we have constantly divested the taste which might be under consideration of its connection with modifying agencies; and thus putting aside as compound all such as could manifestly be resolved into others more simple, we have at length arrived at certain flavours which could not be subdivided. These, therefore, we consider as elementary flavours, and from these we conceive that all others are derived.

They represent as it were so many great families, running mutually into each other, combining in different manners, and branching out into numerous varieties. It were endless to detail the minutiæ of the process; and it is sufficient to say, that, following the plan of analysis resulting from the foregoing remarks, the following are those which we regard as elementary flavours.

The sweet,	as sugar.
The bitter,	as quassia amara.
The alkaline,	as a solution of soda.
The acid,	as a solution of citric acid.
The saline,	as muriate of soda.
The camphreous,	as camphor.
The spirituous,	as alcohol.

In considering each of these great families separately, we shall first endeavour to give an idea of it, by noticing its most perfect specimen; then speak of the general character of the family, and of the action upon the living body, of which such taste indicates the possession; afterwards we shall describe its subdivisions or compounds, beginning with the most simple, and terminating with the most complex. Not that it is proposed to treat of every term which has been made to define a taste, but of such only as it is considered useful or proper to retain. The reader ought first, however, to be admonished carefully to avoid supposing that the terms adopted *necessarily designate* the *nature* of the substances to which they are applied. With this remark we proceed.

§ OF SWEET TASTES.

Sugar is the best specimen of this flavour; but it is found in various degrees down to the scarcely perceptible sweetness of starch. Almost every substance possessing this flavour, and being without odour, may be used as food. The compounds and subtastes which belong to the family of sweets are,

1. The *Amylaceous*,—a natural link between insipidity and sweetness. Starch and other farinaceous substances belong to this taste.

2. The *Mucous* or *Unctuous*, which differs little from the last

except in being complicated with an unctuous or slippery sensation upon the tongue. Such are the (so called) insipid gums and oils.

3. The *Faint* is a slight degree of bitter, combined with a very low degree of sweet; such is the taste of the *Oleum ricini;* but this species is not necessarily accompanied with unctuosity.

4. The *Frugous* or sweet acid, is, as its terms express, that of the sweet fruits.

5. The *Sweet-Spicy* has a considerable degree of sweetness, with great warmth or heat. It consists of substances, ordinarily called aromatic—a term so indefinite that it is necessarily discarded where precision is requisite. The genuine flavour called *Aromatic*, it seems, is disproved to exist, yet the substances included under that denomination are clearly divisible into three kinds: one which possesses a sweetish flavour,—one with a bitter,—and a third in which the heat or warmth is very intense, which is to be referred to the camphreous taste.

There are many other flavours, into the composition of which the sweet enters, but, as in these, sweet is the least predominant, they are to be referred to that class which is the most strongly developed.

§ OF BITTER TASTES.

This family, of which quassia amara is the purest specimen, is of immense extent and importance. There are no substances belonging to it which are fit to be used for food. In it are included the most deadly poisons, and from it we select some of the most useful medicines.

1. The *Mawkish* consists of a combination of the sweet with a stronger degree of bitterness than the faint. It includes many of the tastes called nauseous,—a term which we reject for reasons above-mentioned. The leaves of the *Cassia senna* are the best examples of this taste.

2. The *Astringent* consists of a sensation of constriction upon the tongue, along with a high degree of bitterness, which leaves finally a sort of sweetness upon the tongue. The extract of the *Acacia catechu* may be mentioned as a good specimen.

The *Sub-astringent* is a less degree of the same taste, and without any appreciable after-sweetness.

3. The *Austere* impresses a strong sensation of bitterness and corrugation upon the tongue, as galls and oak bark.

The *Rough* is a variety in which the corrugation is very strong.

The *Acerb* is a variety in which the corrugation is manifestly occasioned by an acid principle combined with the bitter.

4. The *Styptic.* Copper and its compounds are the principal of this class. The *Harsh*, *Cupreous*, and the *Metallic* are synonymes.

5. The *Acrid* consists of a bitter, complicated with a saline, an alkaline, or an acid, or other flavour, and a penetrating burning warmth.

6. The *Sub-acrid* is a similar flavour, of a less intensity, but in which the proportion of bitter is much larger.

The other compounds of this family will be better considered in treating of the Arrangement of the Materia Medica.

§ OF ALKALINE TASTES.

The bitter tastes closely approach the alkaline, which is a flavour not very extensively diffused, nor often found uncombined, except in a weak state. Like the sweet, it is a very simple taste, invariably indicating the nature of the substance which affords it. The fixed alkalies are its standard. Few substances in which it is strongly developed are fit for the purposes of life. Its compounds form a series which appear to terminate at one extremity in the bitter, and at the other in the saline.

1. The *Bland* is a very low degree of alkaline, along with an unctuous sensation.

2. The *Putrid* is a compound of strong alkaline with acrid.

§ THE SALINE TASTES.

The best specimen of this flavour is that of the muriate of soda. All substances which possess it are compounds of acids and bases, and are not capable of being used for food. They generally powerfully excite the secretions of the alimentary canal from the mouth to the rectum, and are therefore much used, either to sharpen the appetite, to improve digestion, or to evacuate the intestines.

Saline flavours are to be found combined with sweet, bitter, alkaline, and acid.

§ OF THE ACID TASTES.

This is another evidently very simple flavour, as it invariably indicates the nature of the substance which possesses it.

Its chief compounds are with the saline, the bitter, and the sweet.

1. The *Sour-sweet*, as acidulous fruits.

§ OF CAMPHREOUS TASTES.

To express a class of tastes consisting of a peculiar hot pungent sensation, as if it entered into the substance of the tongue, and of which camphor affords the best example, we have made use of the term camphreous.

Camphor then is at the head of an extensive series of tastes,

the greater part of which are very strong, and their action on the body powerfully stimulating. Under this head are included

Most of the volatile oils,
Many of the aromatics,
All the peppers,
And the turpentines.

The individual consideration of these will be made more advantageously under the head of the Arrangement.

§ OF SPIRITUOUS TASTES.

The flavour of alcohol and ether is warm, *rich*, and pungent, but more transient than the camphreous, and leaving a sensation not unlike sweetness. Substances possessing a spirituous flavour have an inebriating action upon the body. * Alcohol affords the purest specimen of this flavour, but it is variously combined with others in the different spirits, liqueurs, and wines, contrived to gratify the luxury of man.

The extreme range of this flavour, as is perceived in the ethers, borders upon the sweet, completing as it were the circle of simple sensations from which the immense diversity of tastes are deduced.

§ OF SMELLS.

A true smell or odour is the specific impression communicated to the organ of smelling, in a healthy state of the body, and the ordinary state of the atmosphere, by the recent surface of any substance.

It is not our present business to inquire whether odours are perceptible only in inspiration, and not in expiration; whether they are caused by the volatile particles of a body; or whether they are perceptible in air only, and not in water. It shall only, therefore, be mentioned, that much observation induces us to agree with the affirmative proposition on all these points.

The definition which we have adopted will call to the reader's mind all that has been remarked above concerning the intimate connection between the organ of tasting and the rest of the body; and every thing then observed is applicable much more forcibly to the organ under consideration. The great extent of the nasal cavity, its large supply of nerves, its very direct communication with the nervous centre, its intimate connection with the stomach and organs of respiration, and its alliance with the sense of tasting, render the study of its sensations extremely embarrassing.

If proof were wanting of this perplexing intricacy, we could easily adduce it in the difference of the opinions of authors as to

* Thus carbonic acid, combined with water, has a spirituous taste, and an inebriating property.

the primitive divisions of smells. Linnæus, for instance, has given us the aromatic, the flagrant, the ambrosiac, the alliaceous, the fœtid, the repulsive or deadly, and the nauseous. Haller makes only the ambrosiac or agreeable, the fœtid or disagreeable, and the mixed. Fourcroy has adopted a chemical division, enumerating extractive, oily, aromatic, acid, hydrosulphurous; a division similar to the old one of animal, vegetable, and mineral. Lorry gives us five genera, the camphreous, the narcotic, the etherial, the acid, the volatile, and the alkaline.

But to free the subject from its perplexity, we must disregard these discordant authors, and turn to a volume more instructive than theirs. Adopting the plan which we have pursued with regard to tastes, and unravelling, as it were, each obscuring *envelope*, until we find a simple odour remaining, we shall at length arrive at some which we cannot further divide into others more simple, and which we must therefore regard as elementary. But we cannot pursue this study advantageously, without first considering the numerous modifying agencies, or causes of error, which disguise the sensations of the organ of smelling.

The confounding weak odours with absence of odour is a fertile source of error, and one which is avoided with great difficulty. The strong odours are likewise very liable to be confounded, from their powerful impression upon the mucous membrane of the nose; but they are readily distinguished when moderately diluted, that is, when the *common* stimulating action upon the touch is diminished, leaving the specific sensation upon the olfactory nerves unobscured. The mind has as much influence on these sensations as on those of the organ of tasting.

The *sympathetic action* of the larynx, or the *direct action* of the substance *upon* the larynx, frequently obscures the distinction of odours. Thus it is extremely difficult to distinguish the *actual* ODOUR of sulphurous acid gas, or of other similar substances. The sympathy of the stomach also disguises odours; hence we should avoid such terms as nauseous, repulsive, &c.

The nervous system is sometimes strongly affected by odours. There are many persons, and one such is known to the author, who are seized with syncope or nausea at the smell of a rose.

The health, constitution, temperament, age, sex, idiosyncrasy, habit, prejudices of the experimenter, all influence very powerfully the sensation of smells.

The state of the atmosphere has a remarkable effect. In a humid state the functions of smelling are much more acute; hence the unpleasant smells often perceived before rain.

All these circumstances must be studiously remembered in researches upon the distinctions of odours; and it is after a considerable examination, with a due regard to these modifying

agencies, that we are induced to arrange all Smells under the following divisions. These divisions, ascertained like those of tastes, are also to be regarded as the heads of so many great families of odours, which combine, ramify, and mutually run into each other.

The acidous.	
The spirituous,	as alcohol.
The camphreous,	as camphor.
The fragrant,	as the otto of roses.
The somniferous,	as opium.
The fœtid,	as sulphuretted hydrogen.
The alkaline,	as the starch hyacynth and fresh flesh.

In following the plan adopted with regard to tastes, we shall give a sketch of each of these great families; mentioning their qualities, the action which they indicate, (where it can be ascertained,) and the combinations in which they exist.

§ OF ACIDOUS SMELLS.

This odour is much more frequently found in a compound than in a simple state. However, most of the acid gases afford tolerable instances of it; but in these it is strongly disguised, and very difficultly distinguished on account of the powerful action of these substances upon the organs of respiration. Substances possessing this odour contain generally a volatile principle, which powerfully acts upon the living body. The compounds of this, which we shall mention, are,

The *empyreumatic*, *burnt*, or *flagrant*, which is formed of this odour and others, which are various.

The rancid consists of the acidous, combined with the fœtid.

The other compounds of this class must be referred to the other divisions, or described in the arrangement.

§ OF SPIRITUOUS SMELLS.

Alcohol affords the standard of this odour. In ether it is combined with a fragrant odour; and in the different volatile oils it exists, but obscured by various other odours.

§ OF CAMPHREOUS ODOURS.

Camphor is the representative of this family, which is exhibited by a great series of substances that possess a strong stimulating action upon the body. The taste is always compounded with a strong sensation of heat communicated to the organ of tasting.

The *Ammoniacal* is the term by which we would designate odours similar to that of ammonia, which substance when smelled, separated from its common impression of stimulation, and its

stifling action upon the respiratory organs, affords a smell little different from the camphreous in a concentrated state. It is therefore to be classed under this head.

The *Terebinthinate*, of which the turpentines are the standard, is to be ranked under the head of camphreous. It seems in some of these substances to be combined with the acidous in a low degree.

The *Aromatic* is an important series of odours, which seems to form a link of connection between the camphreous and the fragrant; but as in the greater number the camphreous odour is the more strongly developed, it is right that it should be placed in this family. This volatile and penetrating odour exerts a singular influence upon gustation, disguising, or rather completely altering the real flavour of the substances which possess it,—a fact readily ascertained by the impossibility of correctly distinguishing these substances by the taste, when they are tasted without being smelled at the same time. It is this circumstance which induces us to reject the use of the term aromatic, as a term to designate the flavour of such substances.

§ OF FRAGRANT ODOURS.

This comprehends the sweet, or ambrosiac of some. The term adopted is preferred to these, because in a concentrated state many fragrant odours are any thing but sweeet or ambrosiac. We may mention the Otto or volatile oil of Roses, Musk, and Ambergris as proofs of this remark, and at the same time as good examples of the family. This odour generally assists to compose the aromatic.

The operation of substances with fragrant odours on the human body is various: generally they are not devoid of considerable action, but none of them can be deemed actually poisonous.

Perhaps they may be said to range between the root of the Florentine orris, at one extremity, (which is innocuous,) and musk, which is a powerful antispasmodic, at the other. Upon the whole, we are inclined to consider them as similar in their action to the camphreous-smelling substances, but less active; circumstances to be expected from the relation of the two families. It comprehends,

The *Musky*, of which musk is the chief specimen.

The *Balsamic*, such as is afforded by benzoic acid.

The *Sweet*, a division *made* to include the ordinary perfumes of most flowers.

The *Faint* is a compound of this with the somniferous, both in a low degree; such is the odour of the flowers of the *Sambucus niger*

§ OF SOMNIFEROUS ODOURS.

This is a well marked class of odours, at the head of which we place opium.

Most of the substances of this family exert a narcotic action upon the human frame; and this is *strictly the case with such as possess a bitter taste.*

The Dull and Heavy are branches of this family.

§ OF FŒTID ODOURS.

This term is preferred to "*nauseous*," which some make use of, because that implies actions quite independent of the sense of olfaction. The fœtid odour is well exemplified in sulphuretted hydrogen. Most, indeed it may be said all, substances of a fœtid odour act upon the system as stimulants.

Compounded of this odour is the rancid, in which it exists along with the acidous; but as the latter is generally much stronger it should perhaps be referred to that family.

The *alliaceous* is the most important compound of the fœtid; such is the odour of assafœtida, onions, &c. All this order of substances are termed warm antispasmodics.

§ OF ALKALINE ODOURS.

The alkaline is the term given to this family, rather for want of a better than from its own fitness. The flowers of the starch hyacinth, the white of egg, and fresh flesh, are the best specimens of the order. A solution of potass or soda are also good examples. All substances of this smell, free from taste, or possessing very slight taste, are free from noxious qualities, and may in general be taken for food.

All vegetables possess a peculiar smell when bruised fresh, which is independent of any other odour they may possess, and which has hence been termed a *vegetable smell.* It is in the simplest state in the *Gramina.* This approaches nearest to the present family; but as it affords no distinguishing character further than the vegetable nature of a substance, we shall entirely throw it out of consideration in the arrangement, as it would create confusion in it, and embarrass without improving its practical utility.

Dry vegetable substances, when fractured, although possessing no real odour, often impress the organ of smelling with a dull indefinite sensation, which we regard as nothing but the action upon the sense of touch of the light particles of the substances. This is equally to be disregarded.

Part the Second.

OF THE ARRANGEMENT OF THE MATERIA MEDICA.

Thus we find, that the great variety of tastes and smells, like those of light and of sound, are reducible to a very few general heads or primitive forms; * and we have now to render these subservient to the classification which we have undertaken. This classification is exceedingly simple, and what is perhaps better it is purely natural. When we examine the great multitude of substances which are everywhere presented to us, we find that there are some which are tasteless, and others which possess a flavour; and that there are some substances without odour, others odorous. We find, further, that there are some substances without taste, and without odour; others possessing a taste but not odorous; others again which are odorous but without taste; and others possessing both taste and smell. Here, then, are four great natural divisions, which we shall make the basis of our classification.

These four great classes are again divisible into families, according to the *pure tastes* or essential flavours of the objects composing them. In this and every other instance, we have considered odours as less appropriate marks or characteristics than flavours, because they are generally less permanent, more disguised, and less demonstrative of the nature of substances than flavours. Besides, there are many substances whose smell is totally different in the recent and the dried state, and many which lose all odour upon being dried.

In all cases of the classification of tastes or of smells, simple, compound, or complex, we have invariably placed them under that head, the characteristic specific sensation of which is most predominant in them.

Substances which have a transient or double taste are classed according to the first taste; because, judging from the usual relation between flavour and quality, that appears to be the true one. Thus arsenic, alum, tannin, whose first taste terminates in sweetness, do not belong to the family of sweets.

Lastly, in all cases, whether of odorous or of sapid bodies, they have been regarded and classified *as articles of the Materia Medica*, considered in their pharmaceutical or officinal state, and such parts of them only as are officinal.

These general remarks concerning our plan of classification in detail, although introduced in this place to illustrate the arrange-

* It is a little singular, that the result of the analytical method pursued by the author, has left exactly the same number of primitive sensations in the organs of tasting and smelling, as exists in those of hearing and seeing.

ment of the great *families* which our system comprises, are nevertheless equally applicable to every division and subdivision of them.

The orders into which these families are divided are drawn according to the affinities of the substances in regard to their compound nature. Thus of substances of a compound taste belonging to the family of sweets, such as are formed of sweet and bitter form one order; such as comprehend sweet and acid make another. The *common sensation* of heat or of coldness also assists in the distinguishing of orders; substances with this impression differing materially from substances without it, although in other respects of a similar taste.

There are many substances of similar tastes and properties, but having different odours. For this reason we have considered these substances as belonging to the same order, but have separated them into sub-orders, according to their odours.

Lastly, although, as we have observed, we have not ventured to form genera or species, because we are afraid that such minuteness could not be attempted at the present day without innumerable errors, and because we think it better to do a little, and do it well, than to do much and ill; yet in the following notes to the classification, we shall carefully point out such natural affinities as appear to connect, in natural relationship, those substances which present them whenever they occur.

§ EXPLANATION OF THE CLASSIFICATION OF THE MATERIA MEDICA.

With these few general remarks, we proceed to illustrate the arrangement of the Materia Medica, according to the principles which we have laid down. And the most advantageous method of doing this will be to explain each class, &c. in the order in which it is presented in the table at the end of these pages.

The first class comprises all the substances of the Materia Medica which do not possess either smell or taste. It is perhaps doubtful if these substances are admissible in an arrangement *according to smells and tastes*, seeing that they have neither; but practical utility compels us to give them a place. As, however, it is impossible to divide them into families and orders, according to their *specific* impression on the organs of smelling or of tasting, we have divided them according to their action upon the *common* sensation on the organ of tasting, that is to say, according to their impression on its faculty of touching. Thus we have made three families; the liquid; the soft; and the hard. The liquid contains but one order. The soft contains the pulverescent and the unctuous. The hard comprises the tough and the brittle.

The second class comprehends substances which possess taste,

but are without smell. We must again repeat, that the substances herein arranged are considered in their *officinal* state only, and that a mere *vegetable* smell, * or common impression upon the nose, are not considered as preventing such substances from entering this class.

The first family is that of SWEETS. Its orders are, 1*st*, the *Saccharine ; 2d*, the *Amylaceous*. The third order of this family we have named "*Mucous* or *Unctuous*," for want of a term to express both. † This order appears to comprehend three natural divisions or substances, forming three genera ; of which the gums form one; the emulsive roots, fruits, and seeds another ; and the fixed oils the third. The *Faint* is the fourth order. This contains *Adeps ovillus*, and *Oleum Ricini*, forming one division; and *Ulmi Campestris cortex* which forms another. The *Frugous* is the last order of this family. It comprehends all the sweeter fruits. The officinal ones appear to arrange themselves under two heads, accordingly as the acid flavour of which they are compounded is little or much developed.

The second family is that of BITTERS, which comprehends the following orders.

1*st*, The *Mawkish*, which contains only one officinal substance, elaterium.

2*d*, The *Astringent*.

3*d*, The pure *Bitter*. This comprehends two divisions, accordingly as the substances are or are not accompanied with a warm sensation. We are rather inclined to think that these sub-orders ought to be made into two distinct orders, because the addition of a sensation of warmth materially alters the nature of the substances containing it.

4*th*, The *Austere*.

5*th*, The *Styptic*.

6*th*, The *Acrid*. The properties of this order are remarkably similar, as well as their flavour. The *Oxydum arsenici* ought to be placed in a separate division or sub-order, as its acridity is mild, and is followed by an after sweetness.

7*th*, The *Salino-amare*. This is not intended to comprehend bitter salts, but substances whose taste is compounded of the saline and the bitter. The borate of soda is the most nearly allied to a pure bitter; and the muriate of ammonia has a horrible saltish bitter taste, which nearly approaches that of the following family of Alkaline.

The third family is that of ALKALINES. We have some doubts whether these substances do not strictly belong to the fourth class, since their solutions at least have decidedly an odour. This fa-

* Vide p. 243, Art. Alkaline Odours, &c.

† Perhaps the term "emulsive" would make a sufficient synonyme.

mily contains but one order of officinal substances, of which Lime, Soda, and Potassa, constitute one genus, and Sapo another.

The fourth family is that of Acids. It comprehends the order of *pure acid*, which contains all substances of a purely acid taste, whether they be *pure* acids or not; and the order which I have ventured to denominate the *Saccharo-acid*, which comprehends all the acidulous fruits except the lemon.

The fifth and last family of the second class is the Salines. This contains but one substance contained in the Materia Medica, the muriate of soda. In concluding the classification of this second division, we cannot avoid pointing out the very evident natural affinities (in regard to medical qualities) of most of the orders; and it is also to be remarked, that it is easy to trace a chain of tastes through nearly the whole class, broken indeed by occasional *offsets* or branches, but continuous in the main. Thus, for example, the family of bitters commences with the *Mawkish*, (a compound of sweetness and bitterness, simultaneously acting on the organ of gustation,) and nearly allied to the *Faint*, the last order of the sweets. This (the mawkish) passes into the *Astringent*, in which the bitterness is so powerful as to obscure at first the sensation of sweetness until the former has gone off. To this follows the order of *Pure Bitter;* and we place as the connecting link of the two, the bitter almond. This order has an offset, in which a sensation of heat is superadded. As the taste of bitter becomes more intense it passes into the *Austere*, and of this the galls is the most characteristic specimen. After the *Austere* the *Styptic* follows. The family then assumes a more intense degree, and a more complex form, and constitutes the *Acrid*. After the *Acrid* comes the *Salino-amare*, closely resembling the acrid, deprived of its sensation of heat, and connecting this family to the next, that of *Alkalines*.

The third class is next to be considered. It contains all substances which possess an odour, but not a taste. There are some doubts whether any substances of the Materia Medica are admissible into this class. It is even more in compliance with the descriptions and opinion of authors, than of our own experiments, that we place in it the two substances which will be found in the table. Both these substances belong to one family, and the first *Cera flava*, comes under the order of *sweet smells*, and the second, *Pterocarpi Santolini lignum*, under that of the *aromatic smells*.

In entering upon the fourth class, or that which comprehends substances which have both taste and smell, we find ourselves involved in considerable difficulty. It is a question whether smells or tastes ought to be the basis of its arrangement; and even if that point be decided, it is doubtful what influence the remaining class of sensations ought to have in the detail of the

performance. But since, as we have before observed, smells are much less easily distinguished than tastes; since they are much more subject to change with the condition of the substance; and since they appear to have, in general, much less connection with the qualities of a substance than the tastes have, we have thought it right, as being both more correct and more useful, to adopt tastes as the basis of the arrangement of this class. In accordance with this, therefore, we have made the orders according to the tastes; and as there are many substances belonging to the same order having different smells, we have divided these into sub-orders, according to their difference of smell.

The first family of this class is that of Sweets.

The first order of this family is the *Saccharine*, which is divided into two sub-orders. The first comprehends substances belonging to the order which have an odour compounded of the acidous and aromatic; the second, such as have a faint odour. The former contains honey, the latter manna, figs, and the pulp of the *Cassia fistula*.

The second order is the *Faint*.

The third order is the *Sweet-spicy*. This order contains a great number of the substances called aromatics. We have before given an account of these, and divided them into three kinds, accordingly as they are possessed of a sweet, a bitter, or a camphreous, fundamental taste. The first, or sweet spices, belong to this family, although their generic flavour is strongly disguised by the sensation of heat, the operation of its aromatic odour, and by that peculiar true flavour over and above the sweet, which it certainly possesses, although that is light, and various in different substances. It appears that the berries of the *Juniperus communis*, and the recent leaves of the *Mentha viridis*, belong to a genus different from the others.

The second family is the Bitters.

The first order of this is the *Mawkish*. The odour of all the substances contained in it appear to belong to the *Faint* genus, although we freely confess that we are less satisfied with this order than any other in the list, notwithstanding repeated endeavours to subdivide or amend it. It is clear that all the substances belong to the order of mawkish tastes; but it is concerning their odours that we feel doubtful.

The second order is the *Sub-astringent*.

This flavour resembles the astringent, but is more bitter and free from the after-sweetness of that flavour. It is a singular fact, that we have not been able to discover any substance of a purely *astringent* taste possessing an odour. This order of sub-astringent comprehends two sub-orders: the first is defined by a faint odour, and the second by a sweet. In the former are found

three important dye-stuffs; and this affinity of tastes and smells makes us conclude that their colouring matter is the same. In the second order are placed the Sweet Officinal Flowers, and the root of the Florentine Iris, which seem to constitute one genus; and the root of the *Rheum palmatum*, and the berries and leaves of the *Laurus nobilis*, which belong to another.

The third order is the *Bitter-Spicy*. This is formed of two sub-orders, the first of which contains substances of bitter taste, with an aromatic odour, but without warmth or heat; the second, such as have an aromatic odour, a bitter taste, and much warmth. These latter constitute the bitter aromatics, such are the *Crotonis eleutheriæ cortex*, &c., whilst the former may be called aromatic bitters, as the flowers of the *Anthemis nobilis*, &c.

The next order of this family is the *Sharp-bitter*. We have given this name to an order containing three sub-orders, in order to mark the sensation resembling acid, exerted by some of its constituents. We have, *first*, substances with an acidous and vinous odour, comprehending yeast; *secondly*, such as have an empyreumatic odour, which contains *Pix liquida*, and *Aloes hepaticæ extractum;* and *lastly*, substances of a genus of odours which we have named aloetic. In this division is placed *Myrrha*, and *Aloes spicatæ extractum*.

The fifth order is the *Austere*, and comprehends the *Cinchonæ*, and the bark of the *Salix caprea*, of which the odour in the recent state clearly entitles it to a place here.

The *Sub-acrid* is the next order. We have, 1*st*, substances having a faint odour; 2*d*, such as have a musky odour; and we must observe that by this term we mean, not the slight diluted odour, so delightful as a perfume, but the real strong smell of musk. The *Moschus* and *Castoreum* of this sub-order belong to the same genus; but the root of *Inula Helenium*, and the stigmata of the *Crocus sativus* form *each* a separate genus. The 3*d* sub-order is that containing substances with a balsamic odour. This contains all the balsams.

The *Acrid* forms the seventh order of the family of Bitters. It contains four sub-orders.

The first is of substances with a fragrant odour.

The second, such as have a fœtid odour. This sub-order runs from *Cantharis vesicatoria*, the least characteristic, to *Assafœtida*, the most striking representative of the division.

The third is formed of substances with a somniferous odour, and comprehends almost all the narcotics. It presents two natural subdivisions, in the one of which the acrimony is mild, in the other powerful.

The last sub-order is that of substances with an ammoniacal odour.

We cannot dismiss the order of acrids without reminding the reader of the very natural divisions which it presents, down to the lowest subdivisions which we have made.

The third family is that of Acidous. This contains but one order, divided into two sub-orders.

The fourth family is the Camphreous. The first order of this family comprehends the substances which we have designated *Camphreous Aromatics*. The seeds of the *Amomum repens* are the best specimen of this order. We have placed the flowers of the *Lavandula spica*, and the tops of the *Rosmarinus officinalis* in a sub-order, because their odour distinguishes them from the rest.

The second order contains the Peppers and Culinary Spices. We have divided it into two sub-orders;—in the first are placed peppers, and substances nearly allied to them in taste and smell; and in the second, those which connect the peppers with the true spices in taste and smell. The title which we have given to the order is not a very satisfactory one, but the best we could select.

The *Terebinthinate* forms the third order. It comprehends the turpentines.

The *Camphreous* forms the fourth and last order of the family. It comprehends camphor and the volatile oil of the *Melaleuca Leucadendron*. These two substances belong to different genera.

The last family of this class is the Spirituous. We have two orders; 1*st*, the *Vinous*, which is intended to contain all the wines; and 2*d*, the *Spirituous*, which is intended to comprehend the *Spiritus rectificatus*, alcohol, and all *spirituous liqueurs*.

TABLE OF CLASSIFICATION.

Class I.—INODOROUS AND INSIPID.

Family 1.—*LIQUID.*

Order 1.

Water. Hydrargyrum.

Family 2.—*SOFT.*

Order 1.—Pulverescent.

Carbo ligni. Carbonas plumbi.
Subcarbonas magnesiæ. Oxydum plumbi rubrum.
Creta.

Order 2.—Unctuous.

Cera alba.

Family 3.—*HARD.*

Order 1.—Tough.

Plumbum.
Zincum.
Ferrum.
Stannum.
Argentum.

Order 2.—Brittle.

Plumbi oxydum semivitreum.
Antimonium.
Arsenicum.
Bismuthum.
Antimonii sulphuretum.
——— vitrum.
Carbonas barytæ.
Sulphas barytæ.
Lapis calcareus.
Chelæ cancrorum.
Lapilli cancrorum.
Cervi elaphi cornu.

Class II.—INODOROUS AND SAPID.

Family 1.—*SWEETS.*

Order 1.—Saccharine.

Saccharum purificatum.
Glycyrrhizæ glabræ *Radix.*

Order 2.—Amylaceous.

Avenæ *Semina.*
Hordei distichi *Semina.*
Tritici Hyberni *Semina.*
Amylum.

Order 3.—Mucous or Unctuous.

Acaciæ Arabicæ *Gummi.*
Astragali Tragacanthæ *Gummi.*
Ichthyocolla.
Althææ *Folia et Radix.*
Amygdali communis dulcis *Nucleus.*
Malvæ sylvestris *Herba.*
Dauci carotæ *Radix.*
Pyri Cydoniæ *Semina.*
Tussilaginis farfaræ *Folia.*
Lini usitatissimi *Semina.*
Oleæ Europæ *Oleum fixum.*
Spermaceti.
Adeps purificatus.

Order 4.—Faint.

Adeps ovillus.
Oleum ricini.
Ulmi campestris *Cortex.*

Order 5.—Frugous.

Mori *Baccæ.*
Pruni domesticæ *Fructus.*
Vitis viniferæ *Fructus.*
Tamarindi Indicæ *Fructus.*

Family 2.—*BITTERS.*

Order 1.—Mawkish.

Elaterium.

Order 2.—Astringent.

Acaciæ catechu *Extractum.*
Kino.
Alumen.
Krameriæ *Radix.*

Arbuti uvi ursæ *Folia.*
Aspidii filicis maris *Radix.*
Lythrum salicaria.
Agaricus.

Order 3.—Pure Bitter.

a. *Simple.*

Amygdal. amar. *Nucleus.*
Magnesia.
Chironiæ centauriæ *Summitates.*
Hæmatoxyli *Lignum.*
Lichen Islandicus.
Centaureæ bened. *Herba.*
Cucumeris colocynthidis *Pulpa.*
Spigeliæ Mariland. *Radix.*
Quassiæ excelsæ *Lign.*
Sodæ sulphas.
Potassæ sulphas.
Magnesiæ sulphas.
Gentianæ luteæ *Radix.*

b. *With a warm sensation.*

Anthemidis pyrethri *Radix.*
Æsculi hyppocastani *Cortex.*
Cardamines pratensis *Flores.*
Veronica beccabunga.

Order 4.—Austere.

Polygoni bistortæ *Radix.*
Punicæ granati *Cortex.*
Gallæ.
Quercus *Cortex.*
Rhododendri chrysanthi *Folia.*
Rumicis aquaticæ *Radix.*
Salicis fragilis *Cortex.*
——— albæ *Cortex.*
Swieteniæ febrifug. *Cortex.*

Order 5.—Styptic.

Cuprum.
Cupri subacetas.
Cupri sulphas.

Order 6.—Acrid.

Colchici autumnalis *Bulbus.*
Scillæ maritimæ *Bulbus.*
Veratri albi *Radix siccus.*
Euphorbii officinal. *Gummi res.*
Rhois toxicodendri *Folia.*
Daphnes mezerii *Cortex.*
Crotonis tiglii *Oleum?*
Ari maculati *Radix recens.*
Oxydum Arsenici.

Order 7.—Salino-amare.

Sodæ Boras.
Potassæ nitras.
Ammoniæ murias.

Family 3.—*ALKALINES.*

Order 1.

Calx.
Soda.
Potassa.
Sapo.

Family 4.—*ACIDS.*

Order 1.—Pure acid.

Acidum Sulphuricum.
——— Citricum.
Oxalis acetosella.
Rumicis acetosæ *Folia.*
Supertartras Potassæ.
Citri medicæ *Succus.*

Order 2.—Saccharo-acid.

Citri aurantii *Succus.*
Tamarindi Indici *Fructus.*
Rosæ caninæ *Fructus.*

Family 5.—*SALINES.*

Order 1.—Pure salt.

Sodæ murias.

Class III.—ODOROUS AND INSIPID.

Family 1.—*FRAGRANT.*

Order 1.—Sweet.

Cera flava.

Order 2.—Aromatic.

Pterocarpi Santalini *Lignum.*

Class IV.—ODOROUS AND SAPID.

Family 1.—*SWEETS.*

Order 1.—Saccharine.

a. *With acidous and aromatic odour.*

Mel.

b. *With faint odour.*

Manna.
Fici caricæ *Fructus.*
Cassiæ fistulæ *Fructus.*

Order 2.—Faint.

a. *With a faint odour.*

Cassiæ sennæ *Folia.*
Sambuci nigræ *Flores.*
Geoffroyæ inermis *Cortex.*

b. *With a sweet odour.*

Coci Butyraceæ *Ol. fixum.*

Order 3.—Sweet-spicy.

With aromatic odour and warm taste.

Sweet Aromatics.

Anethi graveolentis *Semina.*
——— fœniculi *Semina.*
Cari carui *Semina.*
Coriandri sativi *Semina.*
Lauri cinnamomi *Cortex.*
—— cassiæ *Cortex.*
Pimpinellæ anisi *Semina.*
Juniperi comm. *Baccæ.*
Menthæ virid. *Folia rec.*

Family 2.—*BITTERS.*

Order 1.—Mawkish.

With a faint odour.

Smilacis sarsaparilla *Radix.*
Jalapæ *Radix.*
Læontodon taraxacum.
Linum catharticum.
Menyanthes trifoliat. *Folia.*
Polygalæ Senegæ *Radix.*
Rhamni cathartici *Succus.*

Schrophulariæ nodos. *Radix.*
Spartii scoparii *Summit.*
Gambogia.
Ammoniacum.

Order 2.—Subastringent.

a. *With a faint odour.*
Anchusæ tinctoriæ *Radix.*
Rubiæ tinctoriæ *Radix.*
Coccus cacti.
b. *With a sweet odour.*
Dianthi caryophyll. *Flores.*
Iridis florentinæ *Radix siccus.*
Rosæ centifoliæ *Petala.*
Viola odorata.
Rhei palmati *Radix.*
Lauri nobilis *Baccæ.*

Order 3.—Bitter-spicy.

a. *With aromatic odour, but without warmth.*
Aromatic Bitters.
Tormentilla *Radix.*
Teucrium chamædrys.
Solidago virgaurea.
Humuli lupuli *Strobil.*
Marrubii vulgaris *Folia.*
Columbæ *Radix.*
Anthemidis nob. *Flores.*
Melissæ offic. *Herba.*
b. *With aromatic odour and warm taste.*
Bitter Aromatics.
Acori calami *Radix.*
Agrimonia *Herba recens.*
Elemi.
Amyridis Gileadensis *Res. liq.*
Arnica montana *Herba sicca.*
Artemisia Abrotanum.
——— Santonicum.
——— Maritima.
——— Absinthium.
Bonplandiæ trifol. *Cortex.*
Canellæ albæ *Cortex.*
Citri medici *Cortex.*
—— aurantiii *Cortex.*
Crotonis eleutheriæ *Cortex.*
Zedoariæ *Radix.*
Dorsteniæ contrajerv. *Radix.*
Gei urbani *Radix.*
Guiaci officin. *Lign. & g. r.*
Hyssopi officinalis *Herb.*
Origanum marjorana.
Teucrium marum.

Order 4.—Sharp Bitter.

a. *With an acido-vinous odour.*
Cerevisiæ fermentum.
b. *With empyreumatic odour.*
Pix liquida.
Aloes Hepaticæ *Extr.*
c. *With an aloetic odour.*
Aloes Socotorinæ *Extr.*
Myrrha.

Order 5.—Austere.

a. *With a slight musky aromatic odour.*
Cinchonæ lancifol. *Cortex.*
Cinchonæ cordifol. *Cortex.*
——— oblong. *Cortex.*
Salicis Capreæ *Cortex.*

Order 6.—Subacrid.

a. *With a faint odour.*
Ipecacuanhæ *Radix.*
Convolvuli scammon. *Gummi res.*
Gratiola officinalis.
Delphinii staphisagrii *Semina.*
Helleborus niger.
b. *With a musky odour.*
Moschus.
Castoreum.
Inulæ Helenii *Radix.*
Croci sativi *Stigmata.*

c. *With a balsamic odour.*
Myroxyli Peruiferi *Balsam.*
Styracis officin. *Balsam.*
Styracis Benzoini *Balsam.*
Toluif. balsami *Balsam.*

Order 7.—Acrid.

a. *With a fragrant odour.*
Petroleum.
Copiaba.
Guaiacum.
b. *With a fœtid odour.*
Assafœtida.
Helleborus fœtidus.
Sagapenum.
Opoponax.
Valerianæ off. *Radix.*
Allium porum.
——— cepa.
——— sativum.
Juniperi Sabinæ *Folia.*
Cantharis vesicatoria.
c. *With a somniferous odour.*
1. *Acrimony mild.*
Papaveris Rhœados *Petal.*
Conii maculati *Folia.*
Hyoscyami nigri *Herb.*
Lactuca virosa.
Digitalis purpureæ *Folia.*
Solanum dulcamara.
2. *Acrimony strong.*
Aconiti napelli *Folia.*
Daturæ stramonii *Herb.*
Opium. *Pap. somnif.*
Atropa Belladonna.
Nicotiani Tabaci *Folia.*
d. *With ammoniacal odour.*
Cochlear. Armor. *Radix.*
Sinapis alba *Semina.*
——— nigræ *Semina.*

Family 3.—*ACIDOUS.*

Order 1.

a. *With an acido-vinous odour.*
Acetum.
b. *With a pungent smell.*
Acidum aceticum forte.

Family 4.—*CAMPHREOUS.*

Order 1.—Camphreous Aromatics.

a. *With aromatic odour and slight bitterness.*
Amomi repentis *Semina.*
Caryophylli.
Asari Asarabacci *Folia.*
Aristolochiæ serpent. *Radix.*
Mentha pulegium.
Origanum vulgare.
Mentha piperita.
Piperis cubebæ *Fructus.*
Tanaceti vulg. *Herb.*
b. *With a sweet odour.*
Lavandulæ spicæ *Flores.*
Rosmarini officin. *Flores.*

Order 2.—Savoury.

a. *True peppery flavour and odour.*
Piperis nigri *Fructus.*
——— longi *Fructus.*
Capsici annui *Fructus.*
Zingiberis officinal. *Radix.*
b. *The peppery odour modified with aromatic.*
Myristicæ moschatæ *Nuclei.*
Myrtæ Pimenti *Fructus.*
Winteræ aromaticæ *Cortex.*
Salviæ officinalis *Folia.*

Order 3.—Terebinthinate.

Terebinthina Chia.
Pini oleum volatile.
Resina Pini.
Juniperæ Lyciæ *Gum. res.*

Order 4.—Camphreous.

Camphora. Melaleucæ Leucodendri *Oleum volatile.*

Family 5.—*SPIRITUOUS.*

Order 1.—Vinous.

With a vino-acidous odour.

Vina.

Order 2.

Spiritus rectificatus. Alcohol.

INDEX OF SUBJECTS.

INDEX OF AUTHORS' NAMES.

ERRATA.

Page 22, line 25, insert *Genus* before *Imperatoria.*
—— 23, — 31, for *Matricara* read *Matricaria.*
—— 33, — 3 from bottom, for Bouillon *Legrange* read *Lagrange.*
—— 46, — 14, for *Bouillon, Lagrange* read *Bouillon Lagrange.*
———— 5 from bottom, for *Jambol* read *Stambol*, or *Constantinople.*
—— 55, — 10, for *Capron* read *Capuron.*
—— 56, — 5, for *Broussct* read *Broussais.*
———— 16, for *Banme* read *Baumé.*
—— 77, — 25, for *southerly* read *southern.*
—— 78, — 21, for *is one* read *are some.*
—— 85, — 32, for *Decandolle* read *De Candolle.*
—— 88, — 21, for *but* read *and.*
—— 151, last line, the reference is omitted. It is " Adresse à tous les Médecins sur la necessité de conscrver le nom officinal des Medicamens; par Hufeland. 8vo. Berlin, 1821, p. xxviii.

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